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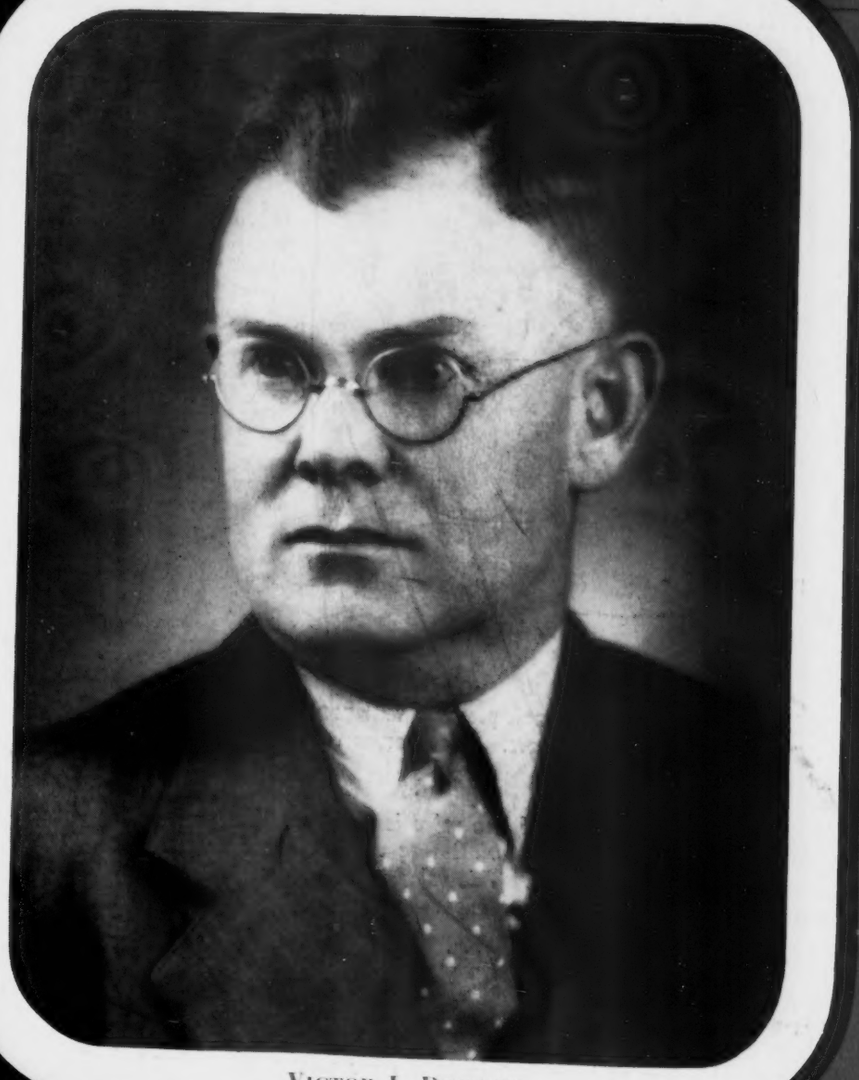

VICTOR I. DOWNEY

Named Superintendent of Refining

For National Refining Co.

NATIONAL PETROLEUM NEWS

MAY 31, 1939

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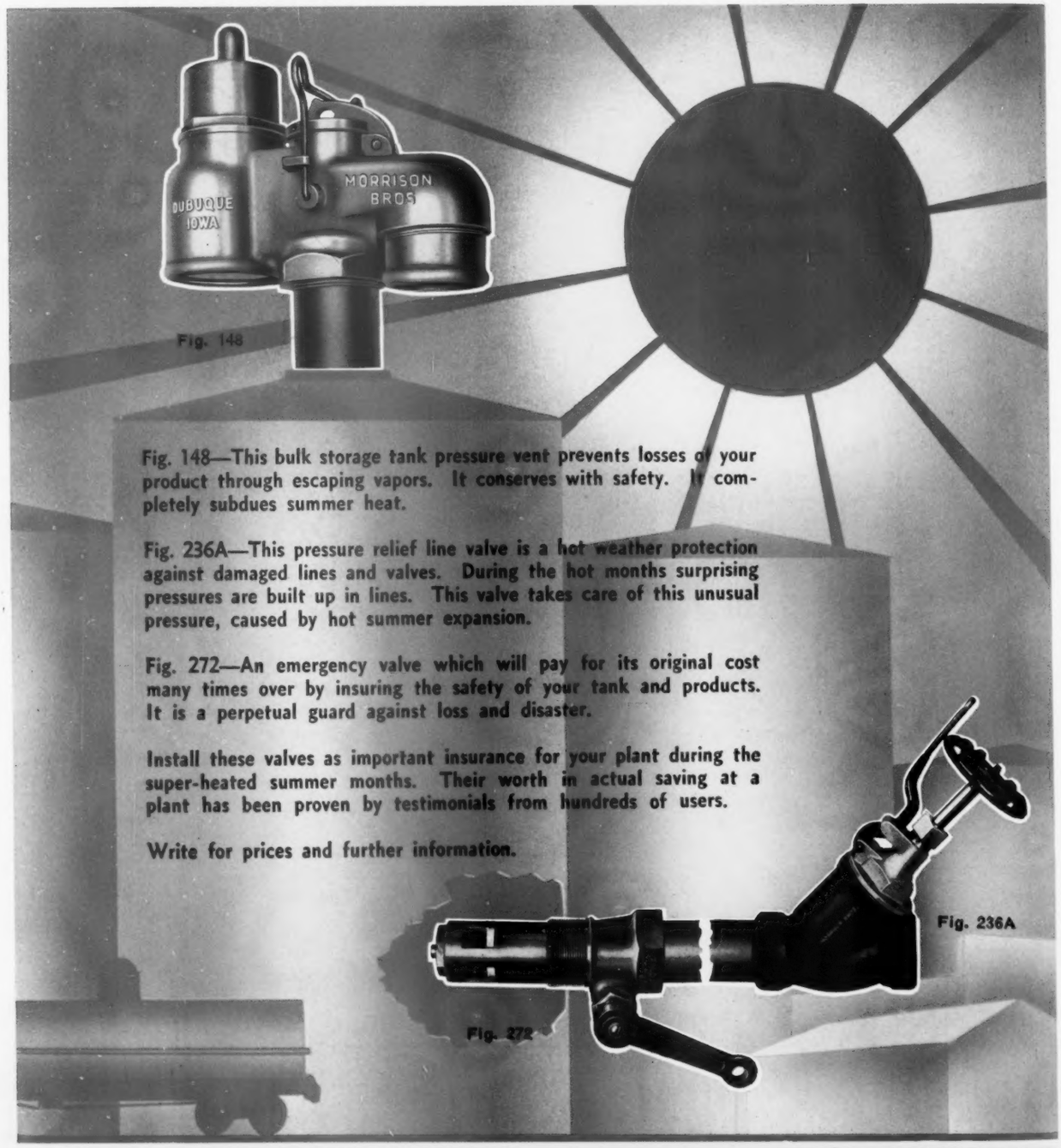

Fig. 148—This bulk storage tank pressure vent prevents losses of your product through escaping vapors. It conserves with safety. It completely subdues summer heat.

Fig. 236A—This pressure relief line valve is a hot weather protection against damaged lines and valves. During the hot months surprising pressures are built up in lines. This valve takes care of this unusual pressure, caused by hot summer expansion.

Fig. 272—An emergency valve which will pay for its original cost many times over by insuring the safety of your tank and products. It is a perpetual guard against loss and disaster.

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Write for prices and further information.

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SOCONY-VACUUM OIL COMPANY, INC.

Army and Navy 'Seize' Oil Control in Virginia

M. B. Whiting

Ben F. Morgan

The Army and the Navy have the Virginia oil situation well in hand, with Ben F. Morgan, a Navy man, heading the Virginia Oil Men's Ass'n. and vice-president of the Virginia Petroleum Jobbers Ass'n., and M. B. Whiting, of Clifton Forge, an Army man, president of the jobbers' association.

Mr. Morgan, of Richmond, an ensign in the U. S. Naval Reserves, is head of the Morgan Oil Co., one of the larger independent oil companies in Virginia. A native of Norfolk and a graduate of Virginia Military Institute, he has been in the oil business for 17 years. For seven years he was in charge of sales for The Texas Co. at Richmond.

Twice president of the National Oil Marketers Ass'n., Mr. Whiting operates Whiting Oil Co., Inc., which he organized in 1919 after his return from France where he saw war service as a captain in the Fifth Battalion, 20th U. S. Engineers. But his experience in the oil business dates back further than that. From 1912 until the war period, he was an auditor for a Sun Oil Co. subsidiary in West Virginia and later at Philadelphia. His company has ten bulk plants and 25 company-operated stations, besides supplying more than 250 dealers and several hundred commercial and farm accounts.

National Petroleum News

VOLUME 31 WEDNESDAY, MAY 31, 1939 NUMBER 22

Defeat Looms For Oil Law In California

N. P. N. News Bureau

LOS ANGELES, May 27. — California oil control possibilities at this session of the state legislature appeared to have "gone a glimmering" as a definite split on the type of administrative set-up developed among those favoring a law regulating crude output.

Legislative squabbles over other matters has delayed floor consideration of oil bills in both the state senate and assembly.

However, way was paved for action on the Wagy Bill in the senate at an early date when the Senate oil industries committee approved the measure which would legalize the voluntary curtailment program and retain administration in the hands of the industry.

Observers believed the Wagy Bill could be put through both houses but would be destined for almost certain veto by Governor Olson, who has made it quite plain that he wants an oil control mechanism operated by state officials, as now provided by new amendments to the Atkinson Bill, which was sponsored by the C.I.O.-Oil Workers Union.

During the week, a series of amendments embodying ideas of the governor were approved by the Assembly's oil industries committee. As modified, the commission administering the law would be made up of the directors of public works, natural resources and finance—all governor appointments—and, in addition, the commission would be authorized to make a study of the entire petroleum industry, reporting its finding to the legislature.

Where this study was leading, was indicated by Long Beach Assemblyman Atkinson, author of this measure, who said,". . . . purpose of the amendments is to establish a foundation for declaring the oil industries a public utility."

Even without these amendments, which would find no favor among members of the oil industry, the Atkinson bill had small chance of passing the more liberal lower house, to say nothing of the conservative-minded Senate.

'Buy Our Oil and Your Station Will Put in Car,' Says Kroger

N. P. N. News Bureau

CLEVELAND, May 29.—The retail gasoline dealer is the "fall guy" in a merchandising campaign of the Kroger Grocery and Baking Co., chain-store organization, on motor oil sold through its stores.

A letter on Kroger stationery extolls the virtue of its Penn-Rad oil and suggests to its customers that "if you don't want to change your oil, take the can of Penn-Rad to the service station from whom you usually buy your gasoline and no doubt they will gladly change it for you. Thus, you will prove to yourself, that price is no longer the only guide to motor oil quality."

Head of the Kroger's promotion department at Cleveland, who admitted that such an idea would originate in his department, first denied knowledge of the letter, and later said he "couldn't understand" how it had been put out.

It would not be surprising to see the retail gasoline dealers of Ohio—who are hardly waxing wealthy on the gasoline gallonage from Kroger's oil customers—construe this as an invitation at reciprocity between the gasoline dealer and the chain grocery store.

In fact, the "Petrodealer", publication of the Independent Gasoline Dealers of Youngstown, O., has taken it as an invitation and suggests that dealers "visit any Kroger grocery store and ask the manager to pickup and deliver to your home an order which you purchased at an independent store".

Going a step farther with this reciprocity idea, the dealer could buy his coffee in bulk and take it to his neighborhood Kroger store "from whom he usually buys his salt and pepper, no doubt they will gladly grind it for him". Too, he would find that "price is no longer the only guide to coffee quality".

Or, in the case of the gasoline dealer who doesn't drink coffee, he could buy his oranges in crate lots and "no doubt his Kroger store would gladly squeeze them".

Jobbers Back 'Divorce' Bill At Congressional Hearings

N. P. N. News Bureau

WASHINGTON, May 29.—Hearings will be continued June 2 on the Harrington bill (H. R. 2318) to divorce marketing from other branches of the petroleum industry, it has been announced by the Healey subcommittee which held one day of hearings last week.

Witnesses at the hearings already held included Rep. Harrington (Iowa), author of the bill, Paul E. Hadlick, Secretary of National Oil Marketers Ass'n., Fred W. Herlihy, Power Oil Co., Orangeburg, S. C., President of South Carolina Oil Jobbers Ass'n.; A. C. Gienapp, Manchester, Ia., secretary of Iowa Independent Oil Jobbers Association and William J. Kemnitzer, petroleum economist and author, all of whom favored the bill, and Hency Brown, representing Operators Oil and Refining Company, an independent refinery at North Long Beach, California, and W. S. Scully, representing Independent Refiners Ass'n. of California, both of whom opposed the measure.

Harrington was on the stand but a short time, explaining that the purpose of his bill was to make the marketing branch of the industry stand upon its own feet, along with other branches. He said the measure will not harm the major companies except as it requires them to divorce themselves from the marketing of products.

Mr. Hadlick presented a lengthy statement in behalf of the measure, declaring that "the independent oil jobber has certain natural advantages that enable him to operate more economically than the major oil companies can conduct their bulk plant operations. Being a local man his business is a local institution that carries weight in the community. He has the advantage of direct supervision over his investment and his operations."

He also cited the four "pillars"

(*Continued on page 21*)

Refiners Wait On Next Move In Ethyl Case

N. P. N. News Bureau

TULSA, May 29. — Mid-Continent refiners were reluctant last week to anticipate, pending some official word from the Ethyl Gasoline Corp., just what effect the federal injunction against that corporation will have on their present methods of marketing leaded motor fuels.

Most of the refiners contacted apparently were of the opinion there would be little material change, their opinions being based, they indicated, on the fact that the "bars" have been almost down now for some time. A few refiners, however, foresaw some change in the marketing of the premium grade of motor fuel.

Several refiners said that for some months now there have been very few turndowns on applications for licenses, both from refiners and from marketers. All the injunction will do, they indicate, will be to let the bars the rest of the way down, which is a very short distance. Any marketer who wants to buy leaded motor fuels now can do so and refiners who have licenses to manufacture leaded motor fuels now can sell to any marketer without first checking to see if the customer has been licensed by the Ethyl corporation.

This probably will mean some change in spot market trading, two or three refiners indicated, since the marketers would have more leeway in choosing from whom they bought their requirements. Brokers might get more opportunity to handle leaded motor fuels, it also was said, although they have been doing that fairly well of late, it was indicated, by merely having themselves appointed the refiner's sales representative.

The Ethyl corporation has a maximum octane specification for regular motor fuel and a minimum octane rating for Ethyl. Although any Tom-Dick-and-Harry now can buy the leaded motor fuels, according to in-

(*Continued on page 27*)

North Carolina Oil Jobbers To Meet at Raleigh June 14

RALEIGH, N. C., May 29.—The next general meeting of the North Carolina Oil Jobbers Assn. will be held at Raleigh June 14, to elect a board of directors in line with the association's present reorganization plans, according to J. H. Parker, president, New Bern, N. C. of Coastal Oil Co., association president.

Sectional meetings were held May 23, 24 and 25 at Goldsboro, Greensboro and Morganton, respectively, to begin reorganization work.

First objective of the association will be to cement the entire jobber membership into a strong, working organization for mutual benefit, Mr. Parker says.

Other aims will be to work for better marketing conditions over the state, to correct legislation harmful to the oil industry, to obtain "livable margins" for jobbers and dealers, and to exchange experiences which may benefit jobber members on such problems as bonds, insurance, taxes, wages, transportation, and on side-line merchandise such as tires, tubes, batteries, accessories and similar lines.

The association, Mr. Parker continues, hopes to co-operate with major companies where interests are mutual, and also to co-operate with and support the efforts of national organizations fighting for objectives similar to those of the North Carolina jobbers' organization.

There are about 125 jobbers in the state eligible to membership, Mr. Parker points out.

A jobber eligible for membership was defined by the association as one who owns his bulk plant and equipment, controls his outlets, and buys goods outright. Jobbers who lease bulk stations from major companies are also eligible to membership. Dues are based on the following annual gallonage: minimum of 500,000 gallons, $10 per year; from 500,000 to 1,000,000 gallons, $15; and from 1,000,000 gallons and up, $25.

The organization will have a full time secretary, with offices in the Lawyers Building in Raleigh.

Presiding at the three sectional meeting were: Goldsboro meeting for jobbers in eastern part of the state, E. M. Thompson, Thompson-Wooten Oil Co., Goldsboro, eastern vice-president of the association; Greensboro meeting, for central part of state, Roby E. Taylor, secretary, Wachovia Oil Co., Winston-Salem; and Morganton meeting, C. M. Barringer, Superior Petroleum & Fuel Co., Newton, western vice-president of the association.

Californians Oppose Venezuelan Imports

By Teletype

WASHINGTON, May 29.—A resolution of the California Legislature urging passage of legislation prohibiting inclusion of petroleum and products in any reciprocal trade agreement with a foreign nation (particularly aimed at the proposed Venezuela trade agreement), has been presented to the U. S. Senate.

The resolution would not only have Congress prohibit any agreement which would "encourage or condone" importation of foreign crude, but would have it either increase "substantially" the existing import excise tax or completely embargo imports of foreign oil.

Although it has been pending for months, no action has been taken on the proposed Venezuela agreement by the State Department.

Indication has been given there may be something doing before long, however (NPN May 10, page 13).

Tidelands Oil Bill Gets 'Thumbs Down'

N. P. N. News Bureau

WASHINGTON, May 29.—An unanimous adverse report on proposals to assert federal title to tide-covered oil lands will be transmitted to the House Judiciary Committee this week by the subcommittee which held hearings on the measure (NPN March 29, page 29). Action was voted late last week, but no written report has been drafted yet.

Sealers Meet June 2-9

By Teletype

WASHINGTON, May 29.—H. S. Bean, Bureau of Standards scientist, will discuss an "investigation of large-capacity meters" which he has recently completed, at the 29th annual conference on weights and measures here June 2-9. A large part of the program for the meeting will be given over to discussion of "standardization of packages."

BULLETINS

Ethyl Is Undecided on Appeal of Bondy Decision

NEW YORK—Ethyl Gasoline Corp. has not decided what action it will take as a result of Federal Judge Bondy's decision last week to enjoin Ethyl's agreements with refiners limiting sale of leaded gasoline to marketers licensed by Ethyl, officials said today. By early next week it is expected that a decision will be reached as to whether Ethyl will appeal Judge Bondy's decision or accept it. So far a decree has not been entered in the case. (See pages 17 and 27 for the articles on Ethyl decision.)

U. S. Crude Output Hits 18-Month High

NEW YORK—Crude oil production in the U. S. averaged 3,585,250 barrels daily in the week ended May 27, up 146,850 barrels from the previous week and the highest since the week ended Oct. 30, 1937, when output averaged 3,602,950 barrels daily, according to report of the American Petroleum Institute today.

Texas daily average production jumped 176,650 barrels to 1,462,000 barrels. Illinois reached a new high of 222,300 barrels daily, up 6700 barrels. Kansas declined 13,800 barrels, Oklahoma 13,500 barrels and California, 11,400 barrels. See page 32 for detailed figures.

Pittsburgh Dealers 'Hold' 4c Price Advance

CLEVELAND—Gasoline prices in metropolitan Pittsburgh and vicinity are continuing to hold at 18 cents for branded regular grades and 16.5 cents for unbranded gasoline and "the market is cleaner than it has been for many months," according to John D. Donahue, chairman of Associated Retail Gasoline Dealers of Allegheny County.

A canvass of the area May 26 to May 30 disclosed only 12 stations which sold at below the posted prices, Donahue said, but "there are no cut price signs anwhere in the county."

Some dealers, he said, have reported gallonage has dropped 10 to 15 per cent, but he added "that gross profits have been increased 300 per cent by the price advance."

Pittsburgh prices were advanced 4.1 cents early in May following a mass meeting of more than a thousand dealers, Donahue said.

Col. Thompson Submits Oil Compact to FDR

WASHINGTON—Chairman E. O. Thompson of Interstate Oil Compact Commission, with two other members and members of Congress from several oil producing states called at the White House this afternoon to present the compact for renewal. Besides the six original compact states, Michigan will be a member under the new compact, if authorized by Congress.

Accompanying Col. Thompson were Lt. Gov. Hiram Dow of New Mexico and ex-Gov. W. J. Holloway of Oklahoma. As well as Senators Connally, Tex.; Thomas, Okla., and Hatch, N. M., and Rep. Boren, Okla.

Col. Thompson told the President that the Compact is "doing splendid work." He indicated that several other states were on the point of joining.

Texas Orders Saturday-Sunday Shutdown of Wells

AUSTIN, Tex.—Shutdown of Texas oil wells each Saturday and Sunday during June has been ordered by Texas Railroad Commission to meet altered conditions. New order supplants earlier one calling for a six-day shutdown, four Sundays and two Saturdays.

New Jersey Standard Hikes Its Bunker Oil Price

NEW YORK—Standard Oil Co. of New Jersey today announced that together with affiliated companies it will advance its posted prices for bunker oil 10 cents per barrel at all eastern seaboard points and 5 cents per barrel for this grade at the Gulf. Effective June 1.

Engineer Heads Grand Jury For West Coast Oil Probe

N. P. N. News Bureau

LOS ANGELES, May 27.—Insurance men predominate on the 23-man federal grand jury selected in Los Angeles yesterday to hear evidence on asserted monopolistic practices of California oil companies in the marketing and distribution of gasoline on the Pacific Coast.

Before Federal District Judge Paul J. McCormick, the 200 prospective jurors were narrowed down to the required number as Joseph H. Brill, special assistant to the U. S. Attorney General read off the names of practically all important California oil men and some 10 co-operative associations, asking prospective jurors whether they were personally acquainted, or held any bias or prejudice against the individuals named. Another eliminating question was whether prejudice was held against "government agencies or the anti-trust laws." There were many disqualifications.

Mr. Brill emphasized that names of individuals included on the long list did not mean they were involved in the inquiry. He said that no implication should be taken from mere reading of the names.

Indications point to a long hearing, probably through the summer. Jurors were told they would serve about three days a week during early period of the hearing, but no assurance was given as to when the investigation would end. The approved jury will reconvene June 2 to begin its duties.

Nearly half of the jury list gave "Insurance" as their past or present occupation, with the others rather well divided among other forms of business.

Howard R. Annin, consulting engineers, was appointed foreman of the body by Judge McCormick, with other approved members as follows: Cecil E. Anderson, insurance; Horace C. Andrews, contractor; Robert H. Cantley, insurance; Horace T. Major, insurance; George F. Neuf, used cars; F. H. Finnen, insurance; Roward G. Raph, investments; Arville R. Cooper, accountant; Ross D. Misner, insurance; Charles T. Wilson, plant department of telephone company; Roydon V. Vosberg, rancher and investments; Ray H. Morse, insurance; John P. Johnston, banker; R. M. Bailey, insurance and appraiser; William R. Kilgore, insurance; John Risbrough, insurance; N. L. Morse, retired buyer; Charles A. Holland, insurance and real estate; H. L. Montgomery, insurance; Casius E. Culberson Jr., insurance broker; Ralph W. Bailey, retired manufacturer; and Arthur J. Howard, insurance and real estate.

The California Oil and Gas Ass'n., representing large and small producers, refiners and marketers on the west coast, adopted a resolution the "unwisdom at this time of hampering and disheartening an industry that is already laboring, on the whole successfully, to build a harmonious industrial structure." Stability and a confident outlook was declared necessary for prosperity, meaning high wages and good hours.

The California oil industry, the resolution said, has for years been alive to the desire of the Federal Government for cooperation between companies in the interest of conservation of natural resources (production) and elimination of destructive price wars (marketing).

Calling attention to a statement by assistant attorney general Thurman W. Arnold, that "Economic dislocation in great industries must be avoided," the resolution said: "With the strength and best minds of the California petroleum industry already at work, as they have been for years, in an effort to harmonize the widely varying interests and objectives of its many segments (and long encouraged in such efforts by both the Federal and State Government), the one agency that could cause such dislocation now would be Federal court action."

Injunction Issued Against Picketing

N. P. N. News Bureau

CLEVELAND, May 29.—A temporary order restraining pickets of National Maritime Union from representing their grievances as being against Standard Oil Co. of Ohio was granted by Judge Scott Stahl here.

Two Toledo stations of Sohio are being picketed, with the union contending that stations of the Ohio company are handling products of Standard Oil Co. of New Jersey. NMU members who were employed on the New Jersey company's tankers operating in coastwise service have been on strike for the past six weeks.

The order restrains pickets from giving out information or carrying banners that the strike is against Sohio.

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NPN's Log
ON OIL LEGISLATION

Summarized oil legislative information below is based on reports received at Cleveland from Washington and state legislatures, which are deemed reliable although NATIONAL PETROLEUM NEWS assumes no responsibility for accuracy or completeness of this information

Congress

US HB-6440, Patman, Texas
To abolish inter-regional freight rate differentials. Interstate Commerce Committee.

US HB-6448, Sabath, Illinois
To liberalize extension of credit to small business. Banking and Currency Committee.

US H J Res-304, Allen, Pennsylvania
To terminate the tax on bituminous coal. Ways and Means Committee.

US SB-2506, Burke, Nebraska
Authorizing Northern Natural Gas Co. to build a pipeline bridge across Missouri River near Sioux City. To Commerce Committee.

★ ★ ★

State Legislatures

Bills Introduced

FLORIDA
HB-1570, Inman.
Regulating transportation of petroleum or other inflammable liquids over highways or streets of any city in state. To Judiciary Committee.
HB-1773, Butt.
Chain store tax. (Amending present law.) To Finance and Taxation Committee.
HJ Res.-1798, Hodges.
Levying tax on severance of all minerals, oils, ores and natural deposits. To Constitutional Amendments Committee.

★ ★ ★

Changed Status

CALIFORNIA
HB-2657. Providing severance tax on petroleum. Amended in House.

CONNECTICUT
HB-574. Concerning adulteration of motor fuel, prohibiting the adulteration of motor fuel. Killed.
HB-997. Providing that in dealers deduction on gasoline taxes under section 655 that the figures in line one be changed from "one percent" to "two percent". Killed.

ILLINOIS
HB-151. Providing regulation and complete procedure for all trucks. Favorably reported in House.
HB-1078. Requiring owners and producers of oil and gas wells to provide meters for measuring oil and gas transported and stored and requiring reports relating thereto. Amended in House.
HB-898. Amending present law regarding motor fuel pumps so that grade and price need not be shown. Second reading in House.
SB-449. Requiring monthly reports relative to amount of oil and gas sold and to whom. Passed Senate.
SB-451. Requiring owners of oil leases to pay royalty owners full posted market price, regardless of price actually received. Passed Senate.

MASSACHUSETTS
HB-1512. Establishing standard specifications for gasoline. Report filed for next annual session.
HB-951. Prohibiting and penalizing the sale of gasoline and other motor fuel at a price lower than the established retail price. Killed.

MISSOURI
HB-530. Provides for a three and one half cent per gallon tax on motor fuel and for a fifty percent reduction in the annual registration fees on all except commercial motor vehicles. Killed.

NEW JERSEY
HB-538. Reducing highway appropriation from $35,000,000 to $31,000,000. Amended and passed in House.

NEW YORK
HB-1322. Requires price posting, etc. for motor fuels and oils. To Governor.

PENNSYLVANIA
HB-14. Provides for refund of taxes paid on liquid fuels used for non-highway purposes. Passed House.
SB-226. Abolishing oil industry investigating commission. Reported with amendment in House.
SB-634. Amending present law to permit first and second class cities to impose tax on products already taxed by state. Favorably reported in Senate.
SB-153. Transferring portion of motor vehicle license fund for general operation of several state departments. Passed Senate.
SB-637. Prohibiting removal of mineral deposits prior to payment of delinquent taxes. Stricken from calendar in Senate.

TEXAS
HB-340. Providing 5 cents per barrel tax on oil for pension fund. Passed House.
HB-390. Levying tax of 4 cents per barrel on oil and 4 percent tax on market value of natural gas, proceeds to go to pension fund. Passed House.

WISCONSIN
HB-294. To amend subsection (1) of section 196.50 of the statutes, relating to the distribution of natural gas without obtaining a certificate of convenience and necessity.

* * *

Bills Approved

CONNECTICUT
HB-993. Providing that any purchaser of gasoline, who uses the same for purposes other than propelling of motor vehicles on the highway, is entitled to a refund of the state tax on application to the commission of motor vehicles. Approved.

MASSACHUSETTS
HB-1670. Prohibiting use of misleading price signs in sale of motor fuels. Approved.

MICHIGAN
SB-185. To authorize the state highway commissioner to ascertain and fix the total mileage of county roads in actual use for public travel taken over as county roads, and that such determination shall be used as a basis for distribution of the highway funds. Approved.

NEBRASKA
Bill No. 2. Repealing truck regulatory act passed by last legislature. Approved.
Bill No. 100. Appropriates sixty-three thousand dollars from state gasoline tax fund to complete Louisville bridge over Platte. Approved.

NEW JERSEY
SB-151. Requiring posting of prices, including taxes, for all motor fuels by use of one sign attached to each pump, and no others. Approved.
SB-152. Provides for revocation of motor fuel licenses for violation of above act (SB-151) or "other reasonable grounds." Approved.

OHIO
HB-491. To authorize the use of water pressure for obtaining oil from wells. Approved.

PENNSYLVANIA
HB-1174, 1245 and 1246. Appropriating over twelve million dollars from motor license fund to various state departments for various purposes. Approved.
HB-885. Transferring $3,885,000 from Motor License Fund to General Fund and providing for subsequent return. Approved.

WISCONSIN
SJ Res.-15. To amend the constitution by adding thereto Section 11 of Article VIII, relating to appropriation and expenditure of all related highway funds and preventing the diversion thereof. Approved.

* * *

FINAL REPORTS

Washington

(Data below supplements earlier report on Washington state legislation published in N.P.N. of April 5.)

Bills Enacted

HB-192. Provides for construction of mine to market roads. Appropriates $100,000 from motor vehicle fund to carry out terms of act. Approved.
SB-25. Uniform financial responsibility act which requires insurance after an accident. Approved.
SB-190. Regulates purchase and sale of any gasoline service station. Approved.
SB-321. Relates to public sale of oil, gas and mining leases, provides for regulation and supervision thereof, licensing of agents, filing of statutory statements, and prescribes penalties and fees. Approved.

Bills Which Did Not Pass

HB-544 and 545. To increase use and sales tax rates from 2 per cent to 3 per cent.
HB-97. To broaden exemption to motor carrier act so as to include all vehicles operating within confines of any city or town and not only those cities of 100,000 population or more.
HB-330. To increase truck fees and limit the length of any vehicle to 35 feet and the gross weight of any truck to 20,000 lbs.
HB-397. To charge a $5 fee in addition to regular registration for diesels instead of 50 per cent more as now provided.
SB-128. To increase fuel oil tax rate from 0.25 cent to 1.5 cents per gallon.
SB-191. To repeal fuel oil tax law.
SB-352. To abolish Highway Safety Fund and provide for transfer to common school fund of all moneys in state treasury to credit of such fund and all moneys thereafter paid into state treasury to credit of said Highway Safety Fund.
SB-49. To provide that compensating tax shall apply whether articles are manufactured in Washington or not, whether available for purchase in state or not. Tax would be retroactive as of May 1, 1935.
SB-370. To provide for a highway protective area parallel to primary and secondary state highways, exempting accessory signs not exceeding 50 square feet on the premises of a private building used for business or industry when located within 100 feet of point of sale or manufacture of product advertised. Provides that existing buildings and signs may be continued but failure to renew or maintain any device for outdoor advertising for a period of one year shall be sufficient cause for removal.
SB-182. To regulate and license auto mechanics. Exempts "auto servicing" which includes washing, painting, lubricating automobiles, repairing, changing or inflating tires and tubes, dispensing gas and oil, or installing new accessories.
SB-355. To make it unlawful for any person to drive or operate upon any public highway any commercial motor vehicle during period from 12:01 A.M. on each Saturday to 6:00 A.M. following Monday and during period from 12:01 A.M. on each public holiday until 6:00 A.M. on the next secular day, newspaper, dairy trucks, etc., exempt. Also prohibits trailers over 1500 lbs.
SB-20. To require any person desiring to drill a well for oil or gas to obtain a permit from Director of Licenses.
SB-169. To prevent waste of crude petroleum oil, natural gas, and products thereof and impose a tax of one eighth of one per cent on gross value when produced, of all oil and gas produced and saved in state.
SB-192. To impose, in addition to all other taxes now or hereafter imposed with respect to particular privileges, occupations and activities, an excise tax upon the receipt of gross income, at the rate of 1 per cent of the gross income. Permits deduction of $1000 by each taxpayer.
SB-221. Outdoor advertising. Exempts signs erected by owner of business to advertise his own goods if such signs are within 100 feet of his place of business.

Oklahoma To Revise Its Specifications For 'Gas', Kerosine

N. P. N. News Bureau

TULSA, May 27.—Changes made by the recent legislature in the inspection laws will nenessitate a hearing by the Oklahoma Corporation Commission to prepare new specifications, rules and regulations as to method of inspection of gasoline, kerosine and naphtha. The hearing probably will be held about the middle of June.

A special committee of the Western Petroleum Refiners Ass'n. met in Tulsa May 24 to draft specifications and recommended regulations for presentation at the commission's hearing. Those attending the committee meeting were:

President L. B. Simmons, Rock Island Refining Co., Duncan, Okla.; Walter Scheumann, Cities Service Oil Co., Tulsa; George Miller, H. L. Baker and William Brenicker, Magnolia Petroleum Co., Dallas; R. C. Alden, Phillips Petroleum Co., Bartlesville; W. L. Thompson, Mid-Continent Petroleum Corp., Tulsa; J. S. Hume, Continental Oil Co., Ponca City; E. O. Derrick, Cushing Refining & Gasoline Co., Cushing, Okla.; C. G. Kustner, Standard Oil Co. of Indiana, Chicago; William F. Lowe, secretary of the Natural Gasoline Ass'n. of America, Tulsa; John C. Day, secretary of the W.P.R.A., and Ed Graham of the Oklahoma Corporation Commission's staff.

Jobbers Back 'Divorce' Bill At Congressional Hearings

(*Continued from page* 17)

which he said are holding up the "oil monopoly and squeezing out the independent refiners." He listed: (1) the Connally Act, (2) the Interstate Oil Compact, (3) the import duty on petroleum products, and (4) monthly forecasts of the Bureau of Mines, he said.

"All of the above measures," Mr. Hadlick added, "have the active support of the major oil companies."

Mr. Hadlick cited prospecti of several oil companies purporting to admit that the companies deliberately lost money in marketing operations, which loss was subsidized through other operations. In this connection he also quoted from articles in *Fortune* and other magazines, and quoted from profit and loss statements as to the profits made in other branches of the industry besides marketing.

Both Mr. Gienapp and Mr. Herlihy told of the difficulties which independent jobbers have in competing with major oil companies. Gienapp pointed out that an oil jobber who purchases branded gasoline on the spot market pays much more than the unbranded buyer who buys "so much below the 'low' ".

Mr. Gienapp also told the subcommittee that the price of gasoline to the public has fallen only since independent jobbers entered the distribution picture about 1920. Without the Independent Jobber, which he charged the major companies are trying to eliminate, the price to the consuming public would be much higher than it is today.

As for the so-called Iowa plan of dealer marketing, Mr. Gienapp said that it was adopted by the oil companies not because of chain store taxes but because it would reduce their marketing costs. He termed it "the most devilish proposition in the industry."

Besides the fact that it allows companies to "evade" taxation, he said, it enables them to bring constant pressure upon their agencies to increase their gallonage. As the companies got out of the retail marketing end of the business, they tried to "chisel" more business from dealers on commercial consumer accounts, he added.

Mr. Gienapp also attacked the practices of the Great Lakes Pipe Line, declaring that, while it has only three storage tanks in Iowa City, nine different companies load nine different brands of gasoline out of those three tanks.

Mr. Herlihy told the committee much the same story as Gienapp, and said, "The pressure has been so great on me lately that I have been considering becoming a commission agent for a major oil company rather than remaining an independent jobber."

Members of the committee expressed interest in the testimony concerning exchanges of gasoline.

Mr. Kemnitzer dwelt at some length on the Pacific Coast situation charging that $63,000,000 have been taken from consumers in the past several years through a price agreement among the major companies, that two of seven companies which, he said, control the marketing of petroleum products on the Pacific Coast showed net profits of more than $3,000,000. Mr. Kemnitzer said that although the petroleum industry appears on the surface to be a single industry, it is actually four separate industries, that a person or company might do business in any one or all of those branches and asserted that the Harrington bill would not only establish real competition in the marketing branch but would result in lower prices to the consumer.

Opposing the bill, Mr. Brown told about the operation of his refinery, and said he sold his gasoline through the association aided by Scully: "If we rely on these jobbers," he said, "it is a very uncertain proposition. They shop around from one plant to another. They have a limited amount of storage . . . they fill up these tanks and when they have sold a good deal of it they sometimes offer it at one or two cents less than they paid for it . . . then the refinery has to cut its price to dispose of its product. Another refinery hears about it and they cut the price again, and pretty soon the price war is on."

Mr. Scully took much the same position as Mr. Brown, saying that his association's 30 members would have to junk a large investment in leasehold interests, in service station and bulk plant locations, brand name advertising, trucks, and consumer acceptance if the bill were passed. Mr. Scully also defended exchanges of gasoline, saying that when one company sold its own brand out of another company's tanks the gasoline was made to the specifications of the selling company.

Rep. Hancock, New York, a committee member, said that he considered advertising of one brand when it came out of another company's tanks to be false and misleading.

Mr. Scully declared that the bill would "create a monopoly which the consumer would have to finance" and said that he was puzzled as to how jobbers would be able to operate market facilities at a profit when the majors had been unable to do so.

From the standpoint of the independent refiner, he said, the bill would put him at the mercy of organized jobbers.

Members of the subcommittee, most of whom expressed considerable interest in the bill and questioned witnesses at some length, included Representatives Healey, Mass., chairman; Satterfield, Virginia, Springer, Ind., and Hancock, N. Y. In addition Representatives Walter, Pa., Byrne, N. Y., Gwynne, Iowa, and Mitchener, Mich., and several other members of the House Judiciary Committee "sat in" on a part of the testimony.

Skelly Again Heads Tulsa Oil Exposition

TULSA, May 27. — W. G. Skelly, president of the Skelly Oil Co., Tulsa, was re-elected president of the International Petroleum Exposition at a meeting of the board of directors May 23. Other officers re-elected were Alf G. Haggem, vice president; Frank J. Hinterliter, vice president; Clyde H. Pape, treasurer; H. R. Powers, secretary; W. B. Way, general manager, and Frank O. Prior and W. M. Bovaird, members of the executive committee.

The next show will be held in Tulsa May 18 to 25, 1940.

'Hot' Oil Law Wins Approval Of Cole Group

N. P. N. News Bureau

WASHINGTON, May 29.—A three-year extension of the Connally "Hot" oil law has been recommended to the House Interstate Commerce committee by the Cole "oil" subcommittee which held hearings on the measure (NPN May 3, page 13). It is expected the full committee will convey the subcommittee's recommendation to the House unchanged. As passed by the senate, the bill would have made the 'hot' oil law permanent.

If not extended, the Connally Law would expire June 30 this year. Under the subcommittee's recommendation it will be continued in effect until June 30, 1942.

In reporting the extending bill (S. 1302), the subcommittee struck from it the provisions of Section 2, which would specifically extend the criminal provisions of the original Connally Act. This section was written into the bill by Senator Connally, Tex., after a Texas court had held it was not certain whether the criminal provisions were applicable under the extended act. However, the U. S. Supreme Court ruled that these provisions were automatically extended by the first extension of the bill in 1937 (NPN May 17, page 17). Therefore, the subcommittee felt Section 2 of the new extending bill was unnecessary.

If the bill passes the House in the form in which it was reported by the Cole committee, it will have to be sent to conference to compromise the differences in the form in which it passed the two houses.

Now It's Official—Motorists in 1938 Paid $972,645,000 in Gasoline Taxes

N. P. N. News Bureau

WASHINGTON, May 29.—The states (and that includes the District of Columbia) got $771,764,000 in motor fuel taxes last year, compared with $761,998,000 the year before, the Bureau of Public Roads concludes from reports of the various state agencies.

Internal Revenue Bureau reported in January that 1938 total collections from the federal gasoline tax amounted to $200,880,797, which figure, added to state collections, makes 1938 gasoline tax "take" by both federal and state governments amount to $972,645,000, compared with $965,023,000 in 1937, and $873,173,000 in 1936.

Registrations of motor vehicles in 1938 totaled 29,485,680, a decrease of 0.7 per cent below the 1937 figure, but because of increased fees in some states, the total receipts from this source for the year were $340,061,000, compared with $337,410,000 in 1937.

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Prices are the Responsibility Of Each INDIVIDUAL Oil Man, Not just of "The Other Fellow"

By WARREN C. PLATT, Editor

The oil industry has just passed the first of the summer's big holiday week ends. Our customers went everywhere and burned up a prodigious amount of gasoline. But, sad to relate, the oil industry did not make any money. In fact some companies in marketing and refining probably only increased their losses.

Product prices this year are under those of a year ago, the recent statement of Assistant Attorney General Thurman Arnold in announcing an oil industry grand jury investigation at Danville, Ill., to the contrary notwithstanding. Arnold said that he had reason to believe that price levels "have continued to a large extent to be artificially maintained."

All we can say to that is that whoever is "maintaining prices" right now is certainly doing a lousy job of it. And that goes for most every one in the industry, big and little. The NPN Gasoline Index for 50 cities on undivided dealer prices shows the average price to dealers May 2 was 0.66-cent per gallon under that of a year ago while the weighted tank car price for 12 wholesale tank car markets was 0.19 cent below that of last year this time. And last year's prices were not what one would exactly call remunerative.

Product prices are strengthening, as is customary when the pull of the summer consumption is felt at refineries and on storage, but prices have not increased enough as most every oil man will agree. If crude oil prices are to be maintained product prices will most certainly have to go on up as Harry F. Sinclair told his stockholders at their annual meeting the other day. But the pity of it is that, even though crude oil prices should be reduced to set a comfortable margin for refiner and marketer, the chances are those better margins would not be maintained any length of time because of the faulty price thinking of most every one in this industry.

Just who, refiner or marketer, thinks of a price as his own personal, individual price?

Just who believes and realizes that it is HIS OWN price that counts in his business and that the responsibility for that price is his and no one else's?

The oil industry has operated since the retirement of the old Standard Oil Monopoly on the theory that it would meet or cut "only just a wee little bit" the "other fellow's" price. Price, in the thinking of the industry, has not been the personal responsibility of each individual oil man, major, jobber, commission man or dealer. It has always been the "duty" of the "other fellow" to get the price up.

If each individual oil man who has to do with price could hold off for just 24 hours more before cutting a price, if each single oil man big and little, would say to himself that he would figure and figure and see if he could not raise his prices just a wee bit, a tenth of a cent or so and fight like all-get-out for that increase and keep on fighting for it, then there would be some hope for a better price in this biggest consuming season in the history of the oil industry.

What the oil industry should do, and every oil association and every oil marketer, is to make next week, when the federal grand jury is scheduled to start its investigation at Danville, Ill., "National Better Price Gasoline Week". Then if the so-called Department of Justice and all the rest of the New Deal were to indorse the crying need for better gasoline prices, a real dent could be made on this terrible depression, now well on its tenth year.

The whole thinking and marketing effort and price policy of the oil industry —as well as New Deal—is to shove prices downward. What the oil industry needs is something to make it stop and think and to turn and follow a policy of each man doing his level best to fight HIS price upward. It may seem a hard row and each man may not get very far for a while, but over a period of time, with each man fighting like he should fight, for PROFITABLE PRICES an improvement could be obtained.

So, perhaps a "National Better Price Gasoline Week", might not be so foolish as it sounds. It at least would make every oil man, stop and think about HIS OWN Price and quit sitting back in his chair and pointing to some one else to do something about it some day.

Small Oil Man Should Demand Protection from Death-dealing Taxes

The great mistake of this New Deal thinking and talking is that so many of its leaders seem to think that wages can be raised indefinitely, hours shortened and taxes increased, and that industry can always give down the milk. Either that or the New Dealers are trying to milk business so dry that it will be a cinch to get it in hock to the government for federal loans and then take it over for some form of government operation, though they might still call it "regulation."

The administration's latest compromise proposal on corporation taxes is in point. This last Saturday the Secretary of the Treasury offered to congressional leaders, allegedly with the re-

luctant approval of the President, to trade off one group of oppressive taxes for some others. The President, it was said, was at last willing to concede a cancellation of the excess and undistributed profits taxes and to agree to carrying over losses for a few years in return for some other things.

Every oil man who believes in sound financing of his own business, who believes in growing from keeping some of his profits in his business, should let his congressman know at once what he thinks of the excess and undistributed profits tax that holds more threat to the complete extinction of small business than all the big corporate evils, actual and imagined, that the New Deal has ever complained of.

A small business man simply must grow from profits. He cannot float stock or bond issues, at least without the greatest difficulty and hardship and seldom even then. The small business man should not be forced to give up control of his company as he often times would have to, to get a few thousand dollars to finance expansion. Yet that is what the excess profits tax would force him much of the time to do, were he able to find any capital that would take the gamble on his own little business.

The small oil marketer and refiner and, many of the big bigger companies, have grown out of profits. They could not have so grown had there been excessive and undistributed profits taxes in effect. Were the theory of that law to be carried to the ultimate, every small business would be frozen solid in its small beginning state. There is hardly a small oil company today that would not be a whole lot smaller, if it were in existence at all, had these undistributed and excess profits tax theories been in full effect these last 15 and 20 years.

Competition in the oil industry has grown and the Independent oil man is here today, because of the absence of these death dealing tax laws and also because prices in the past have seen many seasons at a highly profitable level. Business grows on profits which can be and are plowed back into the business. Small business comes into existence and grows and becomes strong and gives real competition only because of GOOD PROFITS which come from GOOD PRICES.

The New Deal's reluctant proposal to Congress to acquiesce in the elimination of some of the small-company-killing taxes in return for more money to be sought elsewhere, is based on the same unprofitable-price thinking as the statement of the Department of Justice in the Danville investigation that oil prices "continued" to appear to be "artificially maintained."

It is fine for the administration to undertake improvements in our social set-up and to try to relieve small business from the unfair handicaps and restrictions imposed on it by Big Business, but all that does not and the New Deal's six years of activity shows that it has not, helped to get profits for small business. Profitable prices, unfortunately for this country, have not been on the president's "must list."

The New Deal has been busy wooing dissatisfied groups in all lines of business for evidence and support for attacks on Big Business, but the New Deal decidedly has not wooed any group to help get up prices, except for farm products and the wages of labor. The oil case that was tried at Madison a year and a half ago was almost solely AGAINST GOOD PRICES at a time when the prices were direly needed and were of great help particularly to the small man in the oil business. This present Danville investigation also seems to be AGAINST what are today even poor prices, as well as it being seemingly a fishing investigation to get "evidence" to help the government try its case next fall against the few majors that did not plead nolo contendere in the jobbers margin case.

What this oil industry needs today and not a year or five years from now are PROFITABLE PRICES. And the New Deal and all others can crusade for reforms AND PROFITABLE PRICES just as well as for reform and POOR Prices, which seems quite clearly all the New Deal is doing right now.

Around THE MID-CONTINENT

. . . By ALLEN S. JAMES

The legendary story of the Englishman sent out to the "wilds" of Oklahoma a few years ago by the Dutch-Shell interests was recalled to the minds of many oil men last week by the publication of a note a Ponca City, Okla. girl had received from London, England.

The girl some months ago had sealed a note in a bottle and tossed it in the Arkansas river. Presumably the bottle had reached the Gulf and then the Gulf stream for it was picked up near Sandown, England, by one Leonard Cook.

Returning the note to the girl the finder had written he noted Oklahoma was "peopled by red Indians, and assuming you are one, I must congratulate you on the few words of English shown on the enclosed document."

The Englishman sent over from London by the Dutch-Shell company stopped in New York, so the story goes, and bought tent, provisions and wearing apparel to last him at least six months or more. He bought guns and ammunition and he had all that equipment shipped to Tulsa.

It is said 'twas quite a sight to see him standing on Tulsa's union station platform, looking first at his huge pile of equipment and then at the Tulsa skyline.

* * *

• Conoco 'Execs' On Tour

A group of Continental Oil Co.'s executives and directors, led by President Dan Moran, once again are on their annual 8000-mile inspection-trip-by-bus of the company's extensive properties in the southwestern and western states.

Eye-witness reports are that nothing the company owns or has an interest in in the way of production, refining and marketing is overlooked by the inspectors, particularly President Moran.

This year the trip is being made in a new bus said to have all the latest comforts and conveniences, and at the end of the trip there is the lay-over for several days at Moran's ranch in Texas where 'tis said his hospitality is something to anticipate with considerable pleasure.

The group started from Ponca City, Okla. and swung through Oklahoma and out in to New Mexico. At Albuquerque some of the executives and directors were to entrain for California for inspection of properties on the west coast while the remainder traveled by bus northward toward Salt Lake City. There they were to be rejoined by those who had gone to California.

After completing the inspections in the Rocky Mountain states the group is to swing down through the middle western states and then into Arkansas, Louisiana and then westward through Texas to the Moran ranch. It will require about four to five weeks to make the complete trip.

* * *

• Jury Finds No Salt Mackerel

A district court jury went out into the country near Oklahoma City last week, tramped over half of a 160-acre farm, counted trees, tasted water in a lake, examined closely the soil and then returned to the courtroom to hear final arguments in a $2900 damage suit.

The suit had been filed by the owner of the farm against the Transwestern Oil Co. on the allegation that a well drilled by the company had overflowed salt water onto his farm causing considerable damage to soil, trees and the fish in the pond.

The jurors apparently could find no damage for they deliberated only a short time before returning a verdict in favor of the oil company.

* * *

Gov. Leon C. Phillips has ordered "summer hours" for state employes at the capitol.

Some of the departments, he had observed, opened at 8:30 a.m. and shut the door at 4:30 p.m. Others held open sometimes until 5 p.m.

Calling a conference last week of elective officers and department heads the governor decreed that beginning June 1 the state's employes will hit an 8-hour-a-day lick for the taxpayers. The employes will go on duty at 8 a.m., and work until noon. They will return at 1 p.m. and keep at it until 5 p.m. every day except Saturday, when they will be given the afternoon off.

OIL TRANSPORTATION NEWS

Latest developments in freight rates, legislation, taxes, regulations, and new construction affecting the transporting of petroleum products by truck, barge, tanker, pipeline, and railroad.

ICC Control of All Employes Sought in Truckers' Lawsuit

N. P. N. News Bureau

WASHINGTON, May 29.—U. S. court for the District of Columbia has been asked to order Interstate Commerce Commission to assume jurisdiction over hours of service of *all* employes of for-hire truckers operating "in interstate commerce."

The petition was filed by American Trucking Associations, Inc., following the recent order of ICC asserting that it had jurisdiction over only those employes whose activities affect safety of operation—specifically drivers.

Earlier story, with background on status of trucking employes under Wage-Hour Law and under Motor Carrier Act, appears on Page 68.

When ICC disclaimed jurisdiction over hours of other employes than drivers, they automatically came under jurisdiction of the Wage-Hour Division, according to wage-hour officials.

As was expected, ATA filed its petition in its own name and in the name of several truckers: Barnwell Bros., Inc., Burlington, N. C. (which company was the "guinea pig" plaintiff in the case testing validity of South Carolina's size-and-weight limitation law); Brooks Transfer & Storage Co., Richmond, Va.; Brooks Transportation Co., Richmond, and The Baltimore Transfer Co. of Baltimore City, Md.

The petition does not quarrel with the effect of the ICC order on private carriers, such as oil companies which haul their own products or supplies in their own tank trucks.

Plaintiffs hold that Section 204 (a) (1) and (2) plainly of the Motor Carrier Act make it the duty of ICC to assert jurisdiction over *all* employes of for-hire truckers, quoting the paragraphs:

Act Quoted

"To regulate common carriers by motor vehicle as provided in this part, and to that end the Commission may establish reasonable requirements with respect to continuous and adequate service, transportation of baggage and express, uniform systems of accounts, records and reports, preservation of records, qualifications and maximum hours of service of employes and safety of operation and equipment."

A similar paragraph refers to "employes" of contract carriers generally, the same as the above.

Plaintiffs assert that the Commission "arbitrarily undertook to construe" the above sections, "when there was and is no ambiguity or inconsistency . . . . which would require or warrant construction."

Chief objection to being placed under jurisdiction of the Wage-Hour Division rather than the ICC, according to J. Ninean Beall, general counsel for ATA, is that the latter allows greater flexibility of operation, since its regulations permit longer workweeks in peak times, although the same weekly wage is paid the year round.

The industry could, he said, make up for the rigid Wage-Hour control by laying off its men in slack times, to avoid paying them the time-and-a-half for overtime required by the Wage-Hour law, but it would prefer to maintain its personnel the year round.

Other disadvantages complained of are diversity of state and municipal regulation if ICC relinquishes all control, and possibility of many criminal and civil actions arising from suits over the law, and its possible construction as retroactive.

In connection with peak periods, the petition points out to the court that often "emergency demands require them (trucking concerns) to retain skilled employes at full pay for stand-by service, although actual working time may be as low as 30 per cent of pay time, such as is frequently the case in the service to oil fields . . . ."

Hearings Set on Complaint Of Rail-Shipping Refiners

N. P. N. News Bureau

WASHINGTON, May 29.—Interstate Commerce Commissioner Witters will hold hearings July 10 in Dallas, Texas, on charges of the Petroleum Rail Shippers' Association that rail and pipeline rates from the Mid-Continent are in violation of the Interstate Commerce Act. Complaint in the case was filed last August (NPN Aug. 24, page 10) by James F. Lawrence, Tulsa and Washington rate attorney.

The petition filed with the ICC attacked gasoline pipeline companies on the ground that they maintain "excessive and unreasonable rates", but that through stock ownership, the "excessive" dividends resulting from such rates are returned to the owner-shippers, thus amounting to indirect rebates and concessions.

It was also charged the pipeline companies were not bona fide common carriers but "dummy corporations organized by certain shippers who are owners of the stock for the purpose of receiving rebates. . . ."

The petitioners, an association of Mid-Continent refiners who move their products entirely by rail or by rail and truck, charged that the railroads have continuously ignored their own interest and the interest of the public and have exacted prohibitive rates for long haul movements of these complainants to destination territory and have accepted a lower rate on petroleum handled in connection with pipelines.

"The railroads have thereby depleted their revenues," the petition stated, "and if transportation charges by common carriers were equalized the petroleum products shipped by these complainants would increase the revenues of the carriers fifty million dollars annually over the present profits."

ICC Postpones Hearing On 'Inland Empire' Rates

N. P. N. News Bureau

WASHINGTON, May 29.—Hearings before an Interstate Commerce Commissioner on the question of rail and truck freight rates from the Pacific Coast into the "Inland Empire", Columbia River Valley, which were scheduled to have been held June 5, have been postponed to a date to be fixed later. Meanwhile, several oil companies are planning construction of terminals on the Columbia river at Umatilla, Oregon. (See Page 67 of this issue).

Canadian Pipelines May Have to Reduce Rates on Crude Oil

OTTAWA, May 27.—The McGillwray Commission sitting in Alberta has recommended that the rate for transporting crude oil by pipeline to the refineries at Calgary be reduced from 15 cents to 9½ cents and that the charge for loading tank cars be reduced from 5 cents to 2½ cents per barrel.

The commission also recommended that the Imperial Oil and Royalite pipelines and gathering lines be classed as common carriers. The result of this, it was said, would be that Royalite would have to run connections to the Lion and the British-American refineries at Calgary.

It is estimated the recommendation, if it brings this about, would save operators and shippers $730,000 annually in reduced charges. The commission estimated the life of the Turner Valley field as 18 years, based on present production of 6,000,000 barrels yearly.

ICC Calendar On Oil Trucking

Decisions

Edward Glaser, Calhan, Colo. Application to operate as a common carrier of petroleum and products from point in Kansas to points in Colorado, denied.

Kennedy Oil Transport, Newman Grove, Nebr. Permit granted for operation as a contract carrier of petroleum products from Augusta, Wichita, and Eldorado, Kans., to Newman Grove, Nebr.; and from Kansas City, Kans., to Saint Edward, Nebr., over specified routes.

Petroleum Transport Co., Denver, Colo. Application to operate as a common carrier of petroleum products from refining points in Kansas to certain destinations in Colorado, denied.

Hearings

R. L. Lewallen, Brady, Tex. June 26, San Antonio, on common carrier application to transport oil field equipments, etc., in Tex. and N. Mex., over irregular routes.

Hunsacker Motor Freight Co., Dal-

las, Tex. July 10, on common or contract carrier application to transport oil field equipment and supplies in Tex., Okla., Kans. and La. over irregular routes.

Community Oil Sales & Service Co., Webb City, Mo. July 12, Kansas City, on contract carrier application to transport petroleum products in Mo. and Kans.

Stephenson Motor Transfer, Bellows Falls, Vt. July 13, Concord, N. H., on common carrier application to transport petroleum products in Vt., N. H., and Mass. over irregular routes.

Committee Hearings On Land-Grant Rate Repeal Open June 5

N. P. N. News Bureau

WASHINGTON, May 29.—Hearings will be held before a subcommittee of the Senate Interstate Commerce Committee June 5 on two bills which would abolish the land-grant rates which the government pays for transportation over certain railroads as repayment for land grants given the railroads in the railroad-building era.

One bill (Senate 1915) by Sen. Reed (Kans.), would repeal the rates outright, so that the government would either have to pay the same rates as anyone else or else make separate contracts for each hauling job, and the second, S. 1990, by Sen. Truman (Mo.) would repeal the rates for all but movement of military personnel and materiel.

Elimination of these rates would cut-off many rail-shipping refiners from a large share of government business, according to opponents of the repeal measures (N.P.N., Feb. 1, p. 14).

Socony-Vacuum to Extend Pipeline in New England

N. P. N. News Bureau

NEW YORK, May 24.—Socony-Vacuum Oil Co. will build a six-inch steel welded pipeline from Springfield, Mass., to Hartford, Conn. The line will be an extension of its present line which begins at the company's deepwater terminal at Providence, R. I. The new extension, which is expected to be completed before the end of the year, will carry gasoline, kerosine and light fuel oils. Hartford previously had been supplied by barge.

New Cosden Plant Completed

TULSA, May 31.—Cosden Oil Corporation's new combination topping and absorption plant at Graham, North Texas, has been completed and is now making test runs. Plant has daily capacity of 1000 bbls. of crude and 5,000,000 cubic feet of gas.

Danville Jury Will Subpoena 25 Companies

DANVILLE, Ill., May 29.—About 32 witnesses are to appear before the federal grand jury here investigating oil marketing in the middle west from June 5 to 23. The probe, as announced May 16 by the Department of Justice, is to determine if practices complained of in the first Madison indictment are being continued and to obtain evidence from those who plead *nolo contendere* in the second Madison case.

Subpoenas duces tecum were issued late last week for 25 major oil companies, all returnable June 12. The companies which will be required to produce their records include Socony-Vacuum Oil Co., Standard of Indiana, several Gulf companies, three Globe Oil & Refining companies, Deep Rock, Barnsdall, Wadhams, Texas Co., Tidewater, Phillips, Mid-Continent Petroleum, Skelly, Ohio Oil, Cities Service, Empire Oil & Refining, Continental Oil, Pure Oil, Shell, and Sinclair.

Two or three witnesses have been subpoenaed to appear daily. Among those for whom subpoenas were issued for the first day, June 5, were Amos Ball, Chicago, of Standard of Indiana, and G. G. Woodruff, Chicago, of Globe Oil & Refining Co. Three witnesses called for the second day are L. L. Marcell, Kansas City, of Socony-Vacuum White Eagle division; Walter Hoculi, Chicago, of The Texas Co.; and L. Van Eeghen, Los Angeles, of Shell.

Judge Walter C. Lindley presides over the U. S. District District Court for eastern Illinois, at Danville, and the seventh Circuit Court of Appeals appointed Judge Lindley to continue trial of the Madison cases.

Sohio Boosts Third Grade To Same Price as 'Regular'

N. P. N. News Bureau

CLEVELAND, May 31.—Standard Oil Co. of Ohio today announced that, effective June 1, it will advance its third-grade gasoline prices in its statewide schedule 0.5 cent on tank wagon, 1.5 cents on service station, to the same levels posted for regular gasoline. At the same time, the company will revise its statewide consumer tank wagon Q.D.A. for all grades of gasoline, increasing the discount on the lowest bracket and reducing the discount on the top bracket, the announcement showed.

Statewide third-grade prices, effective June 1, according to the announcement, will be: Conundivided dealer tank wagon, 14 cents; divided dealer tank wagon, 14.5 cents; service station, 17.5 cents. Cleveland and Portsmouth, on statewide schedule, will assume these prices. Columbus third-grade prices, up 0.5 cent on tank wagon, 1.5 cents on service station, for the foregoing designations, respectively, will be 15.5 cents; 13.5 cents, 14 cents and 16.5 cents. Toledo prices, up the same amounts, will be 15.5 cents, 12.5 cents, 13 cents and 15.5 cents, respectively. Prices will be unchanged at Akron, Cincinnati, Dayton, Marietta and Youngstown. The foregoing prices include 5 cents taxes.

Q.D.A. Schedule Revised

Comparison of Standards' current statewide Q.D.A. schedule with the new schedule effective June 1 follows: (Discounts are from posted consumer tank wagon prices for quantities taken in one month.)

Current Schedule

0 to 999 gals.	0.5c
1000 to 19,999 gals.	1.5c
20,000 gals. or more	2.5c

Effective June 1

0 to 999 gals.	1c
1000 to 4999 gals.	1.5c
5000 gals. or more	2c

Three Oil Men to Talk at Sales Executives Meeting

PHILADELPHIA, May 25.—Three oil men will speak before the annual convention of the National Federation of Sales Executives, which meets June 5, 6 and 7 at the Bellevue-Stratford Hotel, Philadelphia. They are:

Frank W. Lovejoy, sales manager, Socony-Vacuum Oil Co., Inc., New York, whose subject has not yet been announced.

H. W. Dodge, vice president and general sales manager, The Texas Corp., New York, whose subject is "Sales Management Accepts the Challenge".

Carl Wollner, president, Panther Oil & Grease Co., Fort Worth, Tex., who will talk on "The Sales Manager's Future".

The above talks will be given June 5.

Motions Are Argued In Second Oil Suit For Treble Damages

MINNEAPOLIS, May 29.—The second treble damage suit growing out of the Madison oil cases to come into court was up before Judge Gunnar H. Nordbye in federal district court here last week in a hearing on motions of the defendant major oil companies to strike from the complaint reference to both Madison cases and asking for a bill of particulars. Judge Nordbye has taken the motions under advisement.

The case filed March 21 by the Wolf River Oil Co., Fremont, Wis., owned by Carl B. Abraham. Damages alleged (with treble amounts sought as provided under anti-trust laws) were $33,973.56 as "loss" of 2 cents per gallon margin on 1,698,678 gallons of gasoline marketed from 1931 to March 1, 1936, and $50,000 "damage" to good will.

Defendants named were Phillips Petroleum Co., Cities Service Oil Co., Socony-Vacuum Oil Co., Shell Petroleum Corp., Continental Oil Co., Sinclair Refining Co., Standard Oil Co. of Indiana, Pure Oil Co., and Skelly Oil Co.

The issue of references to the Madison cases in a bill of complaint was ruled on by Judge Nordbye early this year (N.P.N. Feb. 1, page 5) in the original treble damage suit filed in June, 1938, by the Twin Ports Oil Co., ex-jobber at Duluth. Judge Nordbye held that *nolo contendere* pleas in the second Madison case could never be used as prima facie evidence in a civil case, and that final judgment had not been rendered in the first Madison case because of pending appeals so that it, too, was inadmissible.

W.P.R.A. El Dorado Meeting To Discuss Tractor Fuels

SHREVEPORT, La., May 26.—The June technical meeting of the Ark-La.-Tex. division of the Western Petroleum Refiners Assn. will be devoted to a discussion of fuels and lubricants for farm tractors, Secretary Leon C. Grosjean has announced.

The meeting will be held at El Dorado, Ark., the evening of June 9. C. G. Krieger of the Ethyl Gasoline Corp. will lead the discussion.

Government Experts Oppose 'Alky-Gas' Subsidy

Agriculture Expert Says 'Time not Ripe', Treasury Points to Loss of Tax Revenue

N. P. N. News Bureau

WASHINGTON, May 29.—Experts from two governmental agencies—the Treasury and Agriculture departments—threw cold water on proposals to subsidize alcohol-gasoline blends with an exemption from the federal tax on motor fuels, in hearings concluded today by a subcommittee of the Senate Finance Committee.

Hearings were held on bills of Senators Gillette (Iowa) and Gurney (South Dakota). Sen. Clark (Missouri) presided at the hearings. There was no indication of when—if ever—a report could be expected from the subcommittee on the bills.

Sen. Gillette's bill (Senate 552) would exempt from the federal gasoline tax all motor fuel containing a blend of seven per cent alcohol made from domestic farm products, while Sen. Gurney's proposal is to amend the next revenue bill which comes before the Finance Committee by exempting a 10 per cent alcohol blend.

Outstanding testimony of the four days of hearings was given today by Dr. P. B. Jacobs, Agriculture Department chemist, whose study "Motor Fuel from Farm Products" was published by the department early this year.

Dr. Jacobs told the committee that "this legislation may be a little premature, but eventually I think something like this will be brought about."

Reviewing his study, named above, as well as the testimony of the previous three days, Dr. Jacobs pointed out that present economic conditions would not lend themselves to the production of power alcohol.

Dr. Jacobs discounted testimony which had been offered to show how the Atchison Agrol Co. had operated at a continuous loss, asserting that the company started with an old plant, never reached maximum efficiency, and was inadequately financed.

However, he introduced some of his own figures to show that from 10-cents-per-bushel corn it would cost 18.6 cents per gallon to produce alcohol under normal conditions. With corn at 35-cents a bushel, he said, it would cost 26.4 cents a gallon to produce alcohol.

On this basis, Sen. Connally (Tex.), who took a great interest in the proceeding and questioned almost every witness, estimated that a gallon of 10 per cent blend alky-gas would cost 7.14 cents, as against approximately 5 cents for straight gasoline.

Sen. Connally asked Dr. Jacobs, as he had asked other witnesses, if he didn't think there should be a thorough investigation "before we embark on this subsidization." Dr. Jacobs said he thought there should be.

Sen. Connally also asked Dr. Jacobs approximately how much of the increased cost of motor fuel would be borne by the farmer. Dr. Jacobs said about 20 per cent, and the Texas senator brought out that this meant all farmers — cotton, tobacco, and wool, as well as those who grow alcohol-producing products.

Asked by Sen. Connally to give his opinion of some earlier testimony that 20-cents-a-gallon alcohol can be made from 50 cent corn, Dr. Jacobs said it might be possible, if all the variable factors were ideal—such as by-product sales, etc.

One of Dr. Jacobs' main contentions was that alcohol production would have to be organized on a national basis before it could expect to be economic. For instance, he said, the price of one raw material in one locality may be such in a given year, that alcohol might not be produced under 30 or 35 cents a gallon, whereas in another locality there might be a surplus of the crop used and the alcohol might be produced much cheaper. To overcome such difficulties as this, according to Dr. Jacobs, there would have to be some sort of equalization, since the alcohol-blended fuel must compete on a more-or-less rigid market.

As the hearings drew to a close, Senator Gurney introduced in the record (1) testimony offered by Captain H. A. Stuart, U.S.N., as to petroleum research and Navy petroleum requirements presented in connection with the Tidelands Seizure bills; (2) letters from several farm organizations in the Midwest favoring the bill; (3) a rebuttal statement by Dr. Leo Christensen, who had testified earlier, and several other documents, to introduction of which Sen. Connally protested on the ground it would lengthen the record unduly, but said he hesitated to enter a formal objection.

Gurney Opens Hearings

Hearings opened last week, when Sen. Gurney, author of one of the tax exemption proposals, painted a rosy picture for the committee of the vast benefits he foresaw for the agricultural population if alky-gas was subsidized.

Gurney estimated that when the power alcohol industry got underway it would consume 3,500,000 bushels of corn, at 60 cents a bushel, and 3,500,000 bushels of wheat at $1 per bushel in the next 10 years, which would eliminate the need for farm subsidy payments.

Another witness in favor of the bill was Carl E. Wilkin of the Raw Materials National Council, Sioux City, Ia., who covered much the same ground as Gurney, and added that four foreign countries have used alcohol blends and found them economical. He said also that all the cars in the Indianapolis speedway races in 1938 used blended fuel, because it gave cooler operation.

Wilkin thought the oil industry should co-operate in power-alcohol promotion, because, he said, it would create 2,000,000 new jobs, would increase the national income by $85,000,000, and this would benefit all industry.

Another witness in favor of alky-gas subsidization was William W. Buffum of the Chemical Foundation, which, he said, had financed the research in power alcohol. Buffum said that he felt the Jacobs report on alcohol from farm products (N.P.N., Dec. 28, 1938, p. 8) was an endorsement of the power alcohol program.

Buffum compared the possibilities of alky-gas with the development of a method for making newsprint paper from southern pines, and declared that alky-gas was a "superior fuel" to straight gasoline. This, he said, had been proven abroad, particularly in England.

He said it would be impossible for a number of years to make sufficient alcohol to blend all motor fuel with a 10 per cent portion, so that the "loss" of revenue to the government through tax exemption for alky-gas, would be slight for some time. Gurney had said earlier that if all gasoline were blended, the loss of revenue to the government would be about $210,000,000 annually.

Rep. Harrington, Ia., appeared briefly before the committee last week to recommend tax exemption for alky-gas, asserting, like other witnesses, that the 1-cent tax exemption was designed as an inducement to private enterprise to go ahead.

Best "show" on the part of the proponents of the legislation was in the testimony of Dr. William J. Hale, chemical consultant of the National Farm Chemurgic Council and formerly with Dow Chemical Co., who asserted that the motor fuel of the future won't have any gasoline in it; that all previous testimony as to the cost of manufacturing alcohol was so much balderdash, because alcohol could be made for nothing IF there was sufficient outlet for the by-products, and that the whole reason why alky-gas production wasn't going

Government will Build Pilot Plant at Peoria To Test Costs of Power-Alcohol

N. P. N. News Bureau

WASHINGTON, May 29.—A 300-to-500 gallons-per-day pilot plant for experimentation into cheaper methods of producing power alcohol is to be installed at the Peoria, Ill., laboratory of the Agriculture Department, it was revealed by Dr. P. B. Jacobs, Department chemist, at the "alky-gas" hearings here today.

Jacobs said the plant probably will operate at about 100 gallons per day for some time, however. A brief discussion of the plant came after Sen. Robert LaFollette, Wis., asked Jacobs if the Department contemplates any further investigation into the alcohol-for-power field.

The Peoria laboratory is one of the four laboratories authorized by Congress last year to investigate into industrial uses for farm products. It is not expected to be constructed and under way before late summer or fall of 1940.

ahead was because the "international bankers" don't want the American farmer to become as prosperous as they are sure he would if alky-gas use became general.

Asserting his only interest was in "building up a new industry," Hale told the committee that the reason Atchison Agrol had lost money was because it hadn't had adequate outlet for its by-products. He said that a dry ice plant would cut down the manufacturing cost tremendously, utilizing the carbon dioxide by-product of the manufacture, and that if the pulp were fed to animals after use it would further cut down the cost of manufacture.

On the question of "a new industry"—as on several others—the witness was closely questioned by Sen. Connally, Tex., who wanted to know what was to be gained by starting a new industry if it couldn't make a go on its own, but had to be subsidized.

Hale enthusiastically replied that if the taxes were lifted just long enough for the industry to get a start, and for the motoring public to learn of the "vastly superior" performance of alky-gas, then the congress could put a 2-cent a gallon tax on alky-gas and it would still outsell regular gasoline because of its "superiority."

Hale said the motor fuel of the future would contain no petroleum products whatever, but would be 50 per cent alcohol and 50 per cent water; that a spark would ignite the alcohol in the cylinder, causing the water to vaporize and turn the motor over—an internal combustion steam engine, as it were.

At this point Connally asked the witness, who, like several other proponents of the exemption proposals, had stressed the need for conservation of petroleum resources, what would be the use of conserving oil if it wasn't any good. The witness didn't give a very complete answer to this one.

Through his questioning, Sen. Connally brought out that the Atchison Agrol plant had lost money consistently (about $500,000, it was said).

Other "pro" witnesses, most of whom used approximately the same arguments as cited above (except for some of Hale's) included Dr. Leo M. Christensen of National Farm Chemurgic Council, formerly connected with the Atchison plant, and one or two others.

Opposition to the measure at the earlier hearings was expressed by quite an array of witnesses, first of whom was George W. Barton, director of the Chicago automobile club, who said that consumers were interested chiefly in efficiency and cost with relation to efficiency, and that he did not believe alky-gas measured up.

A technical opposition witness was introduced in Prof. H. M. Jacklin, Purdue University, who described a series of laboratory tests on alcohol blends and gasoline, showing that the former are 11 per cent less satisfactory than straight petroleum motor fuels. From figures given in the Jacobs report, Jacklin estimated that the average increased motoring cost per motorist, if blends were used, would be about $16 per year.

Jacklin also pointed out that it would be necessary to burn fuel to produce alcohol, so that the "conservation of natural resources" would not be so great as proponents claim, he said.

Summarizing Jacklin said (1) alcohol blends are inferior to straight gasoline, (2) alcohol costs from 5 to 6 times as much at the distillery as gasoline at the refinery, (3) even with the federal gasoline tax exemption, it would cost the consumer more, and (4) there would always be the temptation on the part of the retailer to substitute ordinary gasoline for blended gasoline to make the 1 cent differential.

Kirk Fox, editor of "Successful Farming" and a member of the Des Moines Chamber of Commerce's agriculture committee, also told the committee that alky-gas was not practicable. Remission of the federal tax, he said, would take care of only about half the additional cost which would be incurred by alcohol blending.

He pointed out further that corn and other alcohol producing crops are soil depleters, and that it would take tremendous quantities of them to fill the need for alcohol.

The Treasury Department is opposed to the tax exemption proposals, the committee was told by Thomas Tarleau of the Secretary's office, because of the "administrative difficulties" and the constant policing which would be necessary to prevent substitution of straight for alky-gas. Tarleau said that the Treasury stood to lose eventually over $200,000,000 per year from the proposed exemption, plus the cost of supervision.

Two representatives of organized motorists appeared in opposition to the measure on the ground it would affect travel, increase costs and reduce government income. They were Hubert Holloway, the American Automobile Ass'n., and Thomas J. Keefe, American Motorists Assn.

Ethyl's Next Move Awaited By Mid-Continent Refiners

(*Continued from page* 17)

terpretations here of the injunction, it is generally believed the Ethyl corporation will continue to check each batch of leaded motor fuel before it permits its refiner-licensee to ship that batch to market.

It was believed also that Ethyl could and would continue to have certain requirements as to amount of lead that could be used and these requirements would be embodied in the license agreements with refiners.

One or two refiners were of the opinion the Ethyl corporation would provide more rigid restrictions on Ethyl gasoline, the premium grade, since that is a trade-marked product over which the corporation still can keep some measure of control.

The corporation naturally could, it was pointed out, prosecute any seller who represented his motor fuel as genuine Ethyl when it did not meet the specifications. The prosecution could be accomplished under the state laws relating to misrepresentation or mis-branding, it was said.

* * *

Ethyl Licensing Enjoined, But Charges on Price Fail

N. P. N. News Bureau

NEW YORK — First part of Federal District Judge Bondy's 5000-word decision in the government's anti-trust suit against Ethyl Gasoline Corp., holding that Ethyl's jobber licensing system should be enjoined, was devoted to a resume of the stipulations of fact on which the case was tried last June.

Reviewing the stipulations, Judge Bondy pointed out scope of the Ethyl patents, terms of licensing agreements with refiners which prohibited sale of leaded gasoline to any marketers not licensed by Ethyl, and that approximately 123 refiners and 11,000 out of the 12,000 jobbers in U. S. had been licensed by Ethyl.

The court's decision also reviewed the stipulations about Ethyl checking up on jobbers as regards their "business ethics"—a term which was said to denote "compliance with marketing policies and prevailing prices of the petroleum industry."

Government contended, the court pointed out, that the defendant corporation had "imposed unlawful restraints first, upon jobbers to whom licenses have been issued, by compelling them to participate in agreements or understandings to maintain resale prices, and second, upon jobbers to whom licenses have been denied, who have been excluded from the market as a result of defendants' agreements with the refiner licensees."

The court held that the government had not made out a case on the price maintenance charge involving licensed jobbers but had made its point as regards the "restraint" imposed on unlicensed jobbers. Following is text of Judge Bondy's reasoning which led to this conclusion:

It is evident that while the distinctions between lawful and unlawful activities may be quite clear in theory, it is not always easy in practice to determine whether the trader has kept within the bounds of his privilege. It is unfortunate, therefore, that the present case has been submitted upon an agreed statement of facts, thus depriving the court of the benefit of the direct testimony of witnesses.

The defendant corporation, although neither a manufacturer of, nor trader in, lead-treated gasoline, concededly takes an interest in and investigates, the price policies of its jobber licensees and of applicants for jobber licenses, and it is also admitted that jobbers have been refused licenses because their price policies were offensive to the defendant corporation. But although a majority of jobbers believe that a jobber must have maintained resale prices in order to obtain a jobber license and a number of them also believe that they are required to maintain prices after the issuance of a license, there is no evidence that the defendants have informed any jobber to that effect and it affirmatively appears that defendants have not issued any statement or instructions that they would cancel licenses for failure to maintain prices. Moreover, there has been and is a great deal of price cutting on the part of licensed jobbers, yet licenses have not been cancelled for that reason.

It is stipulated that in a number of instances where licenses were granted to jobbers whose "practices" were previously considered unsatisfactory, they were issued after representation that the jobbers "marketing practices" would be changed; that some of the defendant corporation's employees have from time to time reported to the jobbers' suppliers that jobbers have not been abiding by the suppliers' "marketing policies and practices", and that there have been sporadic instances in which representatives of defendant corporation,

Ethyl Licensing Enjoined, Price Charge Fails

in cooperation with the jobbers' suppliers, have persuaded jobbers to market gasoline in accordance with the suppliers' "marketing practices". The Government relies heavily upon these facts. But it is not certain that the "marketing policies" and "marketing practices" referred to, include "price policies", in view of the separate and apparently distinctive use of these terms in the stipulation of facts. Although the stipulation of facts defines "business ethics" as including the "marketing policies and prevailing prices of the petroleum industry", it does not state that "marketing policies" or "marketing practices" are synonymous with "price policies".

A clear case of price maintenance thus is not made out, especially in view of the indefinite language of the stipulation. That an agreement or understanding for the maintenance of prices existed between defendants and their jobber licensees is perhaps a permissible but not a necessary conclusion from the stipulated facts. As the case can be disposed of on other grounds, it is unnecessary to pass upon this issue.

The Ethyl Gasoline Corporation has entered into license agreements with approximately 123 refiners, who together refine and sell about 88% of all the gasoline sold in the United States. These include all except one of the major refiners in this country. Each of the refiner license agreements provides that lead-treated gasoline may be sold to those jobbers only who are licensed by the defendant corporation and this provision is almost invariably complied with by the refiner licensees. Since the defendants have denied numerous applications for jobber licenses, many persons desiring to engage as jobbers in the sale of lead-treated gasoline, which comprises about 70% of all the gasoline manufactured and sold in the United States, have been excluded from the market. The unsatisfactory "business ethics" of the jobbers has been the principal reason for such exclusion.

This provision of the refiner license agreements clearly is in restraint of trade. Each agreement calls for cooperative action between the defendant corporation and its refiner licensee in the exclusion of unlicensed jobbers from the market. While a manufacturer or trader may refuse to deal with those who do not observe the resale prices suggested by him, he may not combine or enter into agreements with intermediate distributors to cut off the supplies of such dealers. Victor Talking Machine Co. v. Kemeny, 271 Fed. 810; Straus v. Victor Talking Machine Co., 297 Fed. 791; cf. Federal Trade Commission v. Beech-Nut Packing Co., supra. Although this record may not warrant a finding that the refiner licensees have entered into a combination or conspiracy with each other and with the defendants, the conceded facts are that one hundred and twenty-three exclusion agreements have been separately made by the defendants and their refiner licensees. Each such agreement deprives the unlicensed jobber of one source of supply, while the aggregation of agreements deprives him of all access to the lead-treated gasoline market. Defendants, through these separate agreements, have accomplished what the refiners, without the defendants' aid, could achieve only by a concerted refusal to deal with the jobbers who did not maintain "business ethics." The defendants can fare no better with their system of separate agreements than could the refiners if they formed such a combination. See Dr. Miles Medical Co. v. John D. Park & Sons, 220 U. S. 373, 408. The agreements between the defendants and their refiner licensees accordingly constitute a forbidden restraint of trade. Cf. Straus v. American Publishers' Association, 231 U. S. 222; Eastern States Retail Lumber Dealers' Association v. United States, 234 U. S. 800; Binderup v. Pathe Exchange, 263 U. S. 291; United States v. American Livestock Commission Co., 279 U. S. 435; United States v. First National Pictures, Inc., 282 U. S. 44; United States v. Sugar Institute, 297 U. S. 553.

The defendants, attempting to establish the reasonableness of their action, Standard Oil Co. v. United States, 221 U. S. 1; United States v. American Tobacco Co., 221 U. S. 106; Sugar Institute, Inc. v. United States, 297 U. S. 553; Interstate Circuit, Inc. v. United States, decided by the Supreme Court February 13, 1939, contend that they have the right to require that jobbers dealing in lead-treated gasoline be licensed, in order to preserve the trade-marks, good will and reputation of defendant corporation in lead-treated gasoline, to protect the public from adulteration and to secure compliance with the regulations proposed by the Surgeon General of the United States governing the sale of lead-treated gasoline to the public. These objectives, however, bear no relation to, and, in the absence of statutory permission, do not require or justify, the exclusion from the market of jobbers because their marketing or price policies are repugnant to the defendants. It is because the defendants have not confined themselves to the attainment of the ends mentioned but have used their licensing system for other purposes that the Government seeks to restrain their licensing activities. Cf. Sugar Institute, Inc. v. United States, 297 U. S. 533, 599, 601.

Defendants maintain that they are vitally interested in protecting the health of persons handling lead-treated gasoline and in securing compliance with the regulations proposed by the Surgeon General of the United States. While it may be true, as the Government contends, that the health hazard relates to the handling of the tetraethyl fluid itself and not to the fluid-treated gasoline, the court can not say that the defendants have not a legitimate interest in the maintenance of lead warning notices on the pumps from which treated gasoline is dispensed to the public, which apparently is the only one of such health regulations applicable to the handling and distribution of treated gasoline by jobbers.

The refiner licenses contain a provision, which is not attacked in this suit, requiring refiners, first, to obligate their jobbers to comply with the health regulations and to impose similar obligations upon purchasers from them for resale, and second, to reserve the right to cancel contracts of sale in the event that the jobber does not comply with such regulations. Defendants contend that the refiner has been tried and found wanting, but this apparently was due to an unwillingness on the part of refiners to conduct their own investigations of the jobbers' retail outlets. There does not appear to be any reason why this provision in the refiner license agreements can not accomplish its purpose when supplemented by investigations conducted by the defendant corporation itself, just as is presently done. The court is not concerned with determining defendants' future policies or practices regarding the enforcement of these health regulations, but the court is satisfied that the jobber licensing system is not the only method by which observance of the health regulations by jobbers can be enforced. Moreover, as the Government points out, there would seem to be a complete absence of any temptation on the part of jobbers to avoid compliance with the regulations concerning lead warning signs since these signs are supplied by the Ethyl corporation at a charge of only seven cents each.

It is equally evident that whatever interests the defendant corporation has in preventing dilution, adulteration and deterioration of treated gasoline in the hands of jobbers may be protected without any resort to the jobber license device. Cf. International Business Machines Corp. v. United States, 298 U. S. 131, 139, 140.

Defendants seek to avoid the effect of the anti-trust laws and to support their requirement that jobbers be licensed on the ground that they are merely taking advantage of their patent rights, relying upon the nature of patent monopoly and the decision of the Supreme Court in United States v. General Electric Co., 272 U. S. 476.

The defendant corporation concededly is entitled to the full benefit of its patents. But the rights which attach to the ownership of a patent are not limitless. The courts have frequently defined and limited the scope of the patent monopoly.

In the General Electric case, 272 U. S. 476, 489, 490, the Supreme Court established the principle that a patentee may grant a license "upon any condition the performance of which is reasonably within the reward which the patentee by the grant of the patent is entitled to secure," and may restrict the selling of the patented article by his licensee by limiting the method of sale and the price, "provided the conditions of sale are normally and reasonably adapted to secure pecuniary reward for the patentee's monopoly." See also General Talking Pictures Co. v. Western Electric Co., 305 U. S. 124, 127. The reasoning in both cases establishes that the legality of the conditions imposed by the patentee upon his licensee is a question to be determined by the court and not, as contended by defendants, a question of policy reserved for the judgment of the patentee. In the General Electric case both the patent owner and its licensee manufactured and sold the patented product. The court merely decided that the patent owner could fix the prices and prescribe the method of sale of the patented product manufactured by the licensee in order to sustain the prices at which the former sold the patented product. See E. Bement & Sons v. National Harrow Co., 186 U. S. 70; Straight Side Basket Corp. v. Webster Basket Co., 82 F. (2d) 245, 246.

The defendant corporation does not charge any royalty for the use of its patents, nor does it manufacture, refine or sell any gasoline, whether treated with fluid or not. It is engaged only in the sale of fluid and derives its profits solely from the sale of fluid to its refiner licensees. Its pecuniary interest, if any, in the marketing and price policies of the jobbers selling gasoline is obviously very remote. Cf. Dr. Miles Medical Co. v. John D. Park & Sons Co., 220 U. S. 373, 407; Bauer & Cie. v. O'Donnell, 229 U. S. 1, 16. Moreover, the Ethyl Gasoline Corporation does not itself determine the prices or policies, the failure to abide by which has often resulted in the denial of a jobber license. They are the prices and policies established by some of the refiner licensees, apparently without consulting the defendant corporation. There is no evidence that the refiner licensees can not adequately protect such interests as they may lawfully have in the maintenance of the resale prices of their jobber customers, without any intervention by the Ethyl corporation.

General Talking Pictures Co. v. Western Electric Co., supra, involved a limitation in a license to manufacture and sell a patented product, restricting the licensee to sales of the product for private use in radio reception, as distinguished from commercial use in talking picture equipment. Since the patentee therein retained the right to license other persons to manufacture and sell the product for use in the commercial field, the limitation obviously bore a direct relation to the patentee's pecuniary reward. The Ethyl Gasoline Corporation, however, does not restrict sales of treated gasoline by refiners to licensed jobbers so as to enable it to exploit sales to the excluded group in some other way. Rather its restrictions result in the perpetual exclusion of non-licensed jobbers from the market of lead-treated gasoline, thus depriving its refiner licensees of the opportunity to sell to the excluded group.

In so far, therefore, as the provisions of the refiner license agreements are used to exclude from the market jobbers who do not maintain "business ethics," the court believes that they are not conditions "normally and reasonably adapted to secure pecuniary reward for the patentee's monopoly." United States v. General Electric Co., 272 U. S. 476, 490.

The defendant corporation attempts to identify its position with that of a manufacturer or trader and contends that, as the latter possesses the privilege of selecting his own customers, see United States v. Colgate & Co., 250 U. S. 300, so the defendant corporation may select the jobbers to be licensed, upon any basis satisfactory to itself. This argument, however, ignores the fact that the defendant corporation is not selecting its own customers when it determines what jobbers may sell lead-treated gasoline. The Ethyl Gasoline Corporation manufactures tetraethyl fluid; its sole customers are its refiner licensees. Its selection of refiner licensees is not under attack. The jobber is in no sense a dealer in the article manufactured by this corporation. The jobber is a dealer in lead-treated gasoline, of which the defendant corporation produces merely an ingredient. It is the refiner and not the Ethyl Gasoline Corporation, who produces lead-treated gasoline. The government does not question the right of each refiner licensee to make an independent selection of his jobber customers.

The facts of the case do not fall within the permissive provisions of the amendment to selection one of the Sherman Anti-Trust Act effected by the Act of August 17, 1937, 50 Stat. 693, 15 U. S. Code, Sec. 1, and the defendants do not contend that this amendment has any application to the fact of this case.

The court accordingly is of the opinion that the agreements between the Ethyl Gasoline Corporation and its refiner licensees restricting sales of treated gasoline to those jobbers only whom the former licenses, unreasonably restrain trade and are violative of the Sherman Anti-Trust Act.

The defendants accordingly will be enjoined from requiring jobbers to procure licenses for handling lead-treated gasoline and from requiring refiners to sell lead-treated gasoline to such jobbers only as defendant corporation licenses or otherwise designates.

Submit proposed findings of fact and conclusions of law in accordance herewith.

Tax Evader Nabbed

CLEVELAND — There's apparently no end to the ingenuity of the gasoline tax bootlegger. Here's the latest story:

An innocent appearing farm truck ran out of "gas" near Dyersburg, Tenn. When the driver thought nobody was looking he lifted the tarpaulin covering on the truck and syphoned gasoline from one of the drums that made up the truck's cargo. He was arrested and fined $100 for "bootlegging" gasoline from Missouri, where the tax is only 2 cents per gallon. Tennessee has a 7 cent state tax.

'Fair' Prices for Products Is H. F. Sinclair's Remedy

N. P. N. News Bureau

NEW YORK, May 31.—The way to cure the ills of the oil industry is for the oil companies to secure fair prices for the products they sell the public, rather than to reduce the price of crude, said H. F. Sinclair, chairman of the executive committee of the Consolidated Oil Corp., in a public statement May 29.

The difference in his point of view and that of some executives of major oil companies was emphasized in his statement with the comment: "that the sharp conflict existing for some time among major oil company managements as to measures necessary to correct evils in the industry was approaching a war like basis."

"I believe the public is willing to pay a fair price in order that the industry may be able to continue its contribution to national prosperity, provide the enormous amounts of new money that are required, meet its wage bill, pay its stockholders a reasonable return on their investment, and give those who produce its raw material what crude oil is really worth," said Sinclair.

While saying that the picture was a discouraging one, Sinclair said he still thought that, if the problem were approached from a different angle, "we could avoid what I regard as almost a calamity." Nobody can expect, he said, that purchasers of domestic crude are going to keep on losing the substantial difference now existing between what is paid for crude and what the oil companies receive for refined products.

"We have enough sick industries," said Sinclair, "I don't want to see the oil industry added to the list."

"Sinclair today referred to statements made by John A. Brown, president, at the annual meeting of Socony-Vacuum Oil Co. to the effect that the industry is not receiving prices for finished products commensurate with the cost of crude oil but that as far as Mr. Brown could see better prices for products could not be realized," said the Consolidated's public statement. "As to this attitude, which is similar to that reported to have been expressed by William S. Farish, President, Standard Oil of N. J., Mr. Sinclair said that these views seemed to destroy hope that the present price of crude oil can be maintained."

PumpManufacturers Study Obsolescence Of Gasoline Pumps

N. P. N. News Bureau

CLEVELAND, May 29.—The plan to continue the survey on obsolescence of gasoline pumps and to revive the merchandising committee to carry out this survey, were the two principal subjects discussed at the sixth annual convention of the Gasoline Pump Manufacturers Assn., held at Hotel Cleveland, May 23 and 24.

The market survey will determine obsolescence of pumps now in use and their expected rate of replacement. It will consist principally of obtaining data from weights and measures officials of the various states and local sealers in the U. S., on the number of gasoline pumps now in commercial use. These figures will be correlated with the aid of the gasoline pump industry's sales statistics.

The merchandising committee, consisting of the industry's sales executives, will study market conditions and promotion of public interest in the computing pump and other improved equipment of the industry.

The afternoon of the second day was spent at the Pepper Pike Country Club where delegates played golf. That evening there was an informal banquet at the hotel. Speakers at the banquet were: E. J. Gallmeyer, vice-president, The Wayne Pump Co., Fort Wayne, Ind.; E. C. Marsh, vice-president, S. F. Bowser & Co., Inc., Fort Wayne, Ind.; and "Senator" Edward Ford of Michigan.

Oklahoma Tank Wagon Raised

PONCA CITY, May 31.—Continental Oil Co. today announced that effective June 1 it will advance its gasoline tank wagon prices in the Oklahoma City and central Oklahoma areas to 11 cents for third-grade and 12 cents for regular, including 5 cents taxes. At points in these areas where prices are below 10 cents for third-grade and 11 cents for regular, prices will be advanced only 1 cent, according to the announcement.

Day Promoted By Pennzoil

CLEVELAND, May 29.—Norman M. Day has been elected to succeed the late L. H. Johnson as president of The Pennzoil Co. of California. He was elevated from the vice presidency and was succeeded in this position by Guy G. Gilchrist, general manager. Gilchrist retains the latter position. Leland Johnson was elected to the board of directors.

Frolich Is on NPA Program

N. P. N. News Bureau

WASHINGTON, May 29.—Dr. Per K. Frolich, director of the Chemical laboratories of the Standard Oil Development Co., will discuss manufacture of synthetic products from petroleum at two meetings of the department of manufacture of the National Petroleum Assn. next month—at Olean, N. Y., on June 8 and at Oil City on June 9, the association's headquarters here announces.

Marvel Refining Enlarges

By Teletype

GRAND RAPIDS, Mich.—Marvel Refining Co. here recently announced plans to enlarge their plant capacity to 1000 barrels daily. The plant now averages 250-500 barrels. F. S. Grimes, formerly with Rapid Oil Products Co. has recently become affiliated with this plant. Before joining Rapid Oil Products Co., Mr. Grimes was president of Imperial Refining Co. here.

New Warren Plant Operating

TULSA, May 27. — The Warren Petroleum Co.'s new natural gasoline plant in the Fairbanks field, near Houston, Tex., has been placed in operation.

Plant was constructed at cost of approximately $300,000 and is now processing 20 million feet of gas daily. Plans call for stepping up this volume as well connections are completed to eventual production of 25,000 gallons of natural gasoline daily. F. E. Thompson is superintendent of the new plant.

Illinois Gets New 'Cracker'

PANA, Ill., May 29. — Construction of a 3000-barrel cracking plant costing $300,000 will be completed by August 1. The plant part of which was salvaged from the old Solvex plant formerly at Gladewater, Texas, will operate on crude piped in from the nearby Louden field. Chase Savage, Chicago grain broker, is president of the company, Geo. Edward Day, secretary, Fred H. Luers, treasurer. Other directors include J. H. Weirman, Jack Coyle, Geo. Pfau and C. Hayden Davis.

Tulsa Strike Is Simmering On 2 Fronts

N. P. N. News Bureau

TULSA, May 27.—A technicality over cross-examination of witnesses brought to a complete stop last Friday the slow-moving National Labor Relations Board's hearing of the Oil Workers' (C.I.O.) Union charges of unfair labor practices filed against the Mid-Continent Petroleum Corp.

Ten of the 300 witnesses the union says it is going to use had been heard when the week-end recess was called. The company says it has an equal number of witnesses to be heard.

The recess until May 29 was ordered to permit attorneys to attempt to iron out their dispute over procedure in cross-examination of the witnesses. The corporation's attorneys had contended they were being restricted in their efforts to show the strikers had been discharged for cause.

Gov. Leon C. Phillips of Oklahoma took a hand meanwhile, in the pending charges against some of the Oil Workers' Union heads on charges of conspiracy and riot as a result of the occurrences at the Mid-Continent's plant when the strike was called Dec. 22.

Gov. Phillips charged that the Tulsa county district judges were trying to side-step the trials. The judges had their say, and then a judge recently appointed by Gov. Phillips said he would set a docket for June instead of letting the cases go over until fall.

The docket containing the names of the strike leaders has been set for June 19. County Attorney Dixie Gilmer has announced, meanwhile, that he has filed a charge of directing a riot against President Jack Hays of the local union and 19 other alleged strikers. The county attorney said he was prompted to file the complaints charging more serious offenses because of the recently state criminal court of appeals decision affirming a Tulsa county conviction of two labor leaders convicted of riot.

F. W. Floyd Promoted

TULSA—F. W. Floyd, vice president and production manager of Carter Oil Co., has been named to direct operation of Standard Oil Co. of Venezuela's wells in Venezuela, beginning about July 1. His duties with Carter will be assumed temporarily by R. L. Clifton, general superintendent and assistant to Mr. Floyd.

Illinois and Tanker Strike Cut Takings in Southwest

N. P. N. News Bureau

TULSA, May 27.—The Mid-Continent's crude oil situation, further beclouded by recent developments in Illinois and the tanker strike, the larger purchasers of crude in Oklahoma and Kansas have indicated they are going to move into the summer period with a measure of caution in their buying.

This indication was given last week at market demand hearings in the two states. The hearing before the Oklahoma Corporation Commission at Oklahoma City was to develop testimony for a June proration order. The hearing at Topeka, Kan. before the new Kansas Corporation Commission was to develop testimony for an order for the next 60 to 90 days.

The Oklahoma commission issued an order calling for daily average production of 428,000 barrels. This is the same figure that has been in effect since August 1938, but this time there was definite indication production actually is going to be held to that figure. In past months actual production has averaged somewhat over the 428,000 barrels daily average but has been slightly under the Bureau of Mines' estimate of market demand for Oklahoma crude.

There had been some dissatisfaction reported in a few quarters over this continued production in excess of actual allowables. It was decided at the operators' meeting this time prior to the commission hearing that Conservation Officer W. J. Armstrong should reduce the percentages of flow in several prorated pools in order to hold production definitely within the allowable set by the commission.

There had been some dissatisfaction also, it was reported, over failure to prorate the Ramsey pool in Payne county, which is more than a year old. The pool was placed under proration for June with an allowable of 4650 barrels daily.

The June allowable of 428,000 barrels is approximately 22,000 barrels under the Bureau of Mines' estimate of 450,300 barrels daily. Conservation Officer Armstrong was quoted as saying that the state has been producing about 12.5 per cent under the bureau's estimates but around 4 per cent over the allowable set by the commission. During April, for example, state average 21,681 barrels daily above the allowable.

The Kansas commission, under chairmanship of Andrew Schoeppel, set a precedent for that state hearing when nominations and testimony were received for the months of June, July and August.

Nominations for June totaled 165,000 barrels daily, it was reported, as compared with an allowable for May of 170,350 barrels. One large purchaser in Kansas notified the commission it was reducing its nominations approximately one-fourth under the May figure it has nominated. This company, Sinclair Prairie Oil Marketing Co., several days ago inaugurated pipeline proration in Oklahoma and Kansas. The tanker strike was said to be causing some delay in movement of crude Sinclair was shipping by pipeline to the Gulf coast for tanker haul to east coast refineries.

Two other large purchasers in Kansas were understood to have reduced their nominations somewhat. Both of these companies have production in Illinois.

The Kansas order probably will not be issued for another week, Chairman Schoeppel indicated. He said that the July and August allowables may be only tentative and subject to change at a later date.

The chairman also announced that the granting of special allowables was being reduced about 25 per cent monthly until they can be eliminated. This action, it was explained, is in conformity with the new conservation law.

Allowable production in Louisiana in June will be approximately 611 barrels daily under the May figure, Conservation Commissioner William G. Rankin has announced. The June figure is 263,023 barrels daily.

South Louisiana fields have been given a daily average of 198,795 barrels, a reduction of 2210 barrels daily under the May figure. There were some words in the press last week by Texas Railroad Commissioner Jerry Sadler in which he expressed concern over the piling up of crude oil at the Gulf coast, with a good bit of it, he declared, being Louisiana oil brought into Texas.

This increase in oil in storage on the Gulf coast generally is attributed to the slowing up of some crude shipments to east coast refineries as a result of the marine strike.

The north Louisiana field was given a daily allowable of 64,228 barrels, approximately 1300 barrels daily above the May figure.

DEATHS

So widespread is the oil industry that many friends are separated for years. NPN would like friends and relatives of any deceased oil man to send in notice of his passing for publication.

George H. Pattison

George H. Pattison, 70, of Winnetka, Ill., died May 2. Mr. Pattison was in the oil business for 45 years and was former president of the Economy Oil Co. A native of Hudson, Michigan, he was brought to Chicago as a child. He graduated from University of Michigan and later went into the oil jobbing business.

He is survived by his widow and four sons, Donald, of Shaker Heights, Ohio, Eugene of Middleton, Wis., Walter of Minneapolis, Minn., and George H., Jr. of Winnetka.

* * *

R. B. Bryant

R. B. Bryant, 52 years old oil millionaire who entered the industry in 1931 in the East Texas Field, died of heart disease at Austin, Tex. May 21. Bryant, raised in Nashville, Ark. got his start in East Texas and then extended his activities to the Corpus Christi, Arkansas and N. M. A. Fields.

* * *

Thomas P. Melvin

Thomas P. Melvin, aged 65, one of the pioneer oil men in the Mid-Continent, died May 26 in a Tulsa hospital of a heart ailment. The body will be sent to Clarion, Pa. for interment.

Prior to his retirement 10 years ago Mr. Melvin was a vice president and general manager of the former Chestnut & Smith Corp., pioneer manufacturers of natural gasoline. He had come to Tulsa in 1911 to build the Phoenix Refining Co.'s plant at Sand Springs, Okla. He managed the plant until he joined the Chestnut & Smith organization. He was one of the organizers of the Western Petroleum Refiners Assn.

Mr. Melvin's early experience in the oil industry included a position as representative of the Vacuum Oil Co. at Hamburg, Germany. He later was superintendent of construction for several large refineries in both Germany and Austria. Returning to the United States he directed the construction of a refinery at Lawrenceville, Ill., now owned by the Texas Corp.

* * *

Kenneth Nelson

Kenneth Nelson, 33-year-old superintendent for Ray Stephens, Inc., was injured fatally May 26 when the company's gas well in the Cement field of Caddo county blew connections and ran wild. Mr. Nelson was on the derrick floor within a few feet of the control head and the blast threw him against a steel strut of the derrick fracturing his skull.

* * *

T. J. McMahon

T. J. McMahon, aged 56, vice president of the Texas Pipe Line Co., died suddenly of a heart attack at his desk in the Texas Co. building here May 24.

Mr. McMahon went to Texas from Karns City, Pa. in 1908 as a dispatcher in the pipeline department. He was made chief dispatcher in 1917 and in 1928 was elected a vice president and operations manager. He was known in all oil fields of the United States. Survivors are his widow and four sons.

* * *

Frank Hovell

Frank Hovell, aged 57, former resident of Tulsa, died last week of injuries received in an accident at a refinery at Smackover, Ark. several weeks ago. Formerly a refinery superintendent at San Antonio, Tex., Mr. Hovell went to Smackover in 1933.

L. P. St. Clair Retires

N. P. N. News Bureau

LOS ANGELES, May 27.—L. P. St. Clair, chairman of the board of Union Oil Co., and one of the few remaining pioneers who saw and helped the California oil industry start from scratch, tendered his resignation and retired from active participation in the management of the company, May 26th. He will, however, continue as a member of the directorate.

Expressing his wish to be freed from the responsibilities of business life, Mr. St. Clair called attention in his resignation to the fact that his present age exceeded that prescribed by retirement policy of the company.

With a long record of achievement in the oil industry, Mr. St. Clair has been connected with Union for 30 years, most of that time in an executive capacity. Following eight years as president of the company, he became chairman of the board last year and was succeeded as president by Reese H. Taylor.

First Quarter 'Gas' Demand Is above 1938 in 39 States

N. P. N. News Bureau

NEW YORK, May 29.—Gasoline consumption in the first quarter of this year increased 2,167,000 gallons, or 4.32 per cent over the corresponding period of last year, as compared with 1,838,000 gallons, or 3.80 per cent last year over the first quarter of the previous year, according to figures compiled by the American Petroleum Institute from reports on state gasoline tax collections. Consumption the first quarter of this year totaled 52,323,000 gallons.

Increases for the first quarter were reported in 39 states and the District of Columbia, ranging from 0.12 per cent in New Mexico to 23.99 per cent in Nevada. Decreases were reflected in nine states, ranging from 0.23 per cent in Colorado to 15 per cent in North Dakota. Decreases in the other seven states were: Arizona, 0.73 per cent; Iowa, 1.32; Louisiana, 0.48; Minnesota, 6.07; Mississippi, 0.28; South Dakota, 5.07; and Tennessee, 0.35 per cent.

The largest per cent of increase in this period was in the Rocky Mountain states, where average increase was 7.31 per cent. The smallest increase was in the 11 midwestern states, which showed a gain of only 0.51 per cent. Increases in other sections of the country were: New England, 5.76 per cent; Middle Atlantic, 5.47; southeast, 5.53; southwest, 4.14; and Pacific Coast, 5.81 per cent.

States showing an increase of 10 per cent or more were Nevada, North Carolina and Wyoming.

In March, gasoline consumption totaled 1,733,828,000 gallons, an increase of 44,053,000 gallons, or 2.61 per cent over March a year ago. Increases were reported in 37 states, and the District of Columbia, ranging from 0.47 per cent in Vermont to 31.89 per cent in Nevada. Decreases were shown in 11 states. These ranged from 0.68 per cent in Massachusetts to 33.15 per cent in North Dakota. Four other states, aside from North Dakota, reported decreases higher than 10 per cent. These were: Iowa, Minnesota, South Dakota and Tennessee.

Weekly Changes in U. S. Crude Oil Stocks*

(Thousands of Barrels)

Grade or Origin	May 6	May 13	May 20	Chng. from May 13
Pennsylvania grade	5,689	5,697	5,675	— 22
Other Appalachian	1,295	1,250	1,182	— 68
Lima-Michigan	1,898	1,913	2,050	+137
Illinois-Indiana	12,605	13,104	13,060	— 44
Arkansas	3,034	3,062	3,156	+ 94
Kansas	7,360	7,376	7,416	+ 40
Louisiana	14,151	14,241	14,061	—180
Northern	6,013	6,015	5,931	— 84
Gulf Coast	8,138	8,226	8,130	— 96
New Mexico	6,678	6,660	6,528	—132
Oklahoma	69,847	69,901	69,611	—290
Texas	91,862	90,825	90,558	—267
East Texas	21,949	21,524	21,574	+ 50
West Texas	16,028	15,757	15,796	+ 39
Gulf Coast	21,430	21,446	21,566	+120
Other Texas	32,455	32,098	31,622	—476
Rocky Mountain	20,426	20,378	20,409	+ 31
California	40,075	39,538	39,739	+201
Foreign	3,687	3,794	3,623	—171
Total United States refinable	278,607	277,739	277,068	—671
Heavy in California	14,943	14,669	14,593	— 76

*As compiled by U. S. Bureau of Mines.

Crude Stocks Decrease

N. P. N. News Bureau

WASHINGTON, May 29.—Crude stocks decreased during the week ended May 20 by 671,000 barrels, standing at 277,068,000 barrels at the week's end, Bureau of Mines reports. A decrease of 500,000 barrels in domestic stocks and 171,000 in stocks of foreign crude combined to make the total drop. Stocks on May 21 last year were 302,597,000 barrels.

Stocks by grade or origin, shown tabularly, appear in above table.

Gasoline Consumption by States for March and First Quarter of 1939

(Figures in Thousands of Gallons)

	Month of Feb., 1939 Gallons	Month of Mar., 1939 Gallons	Mar., 1938 Gallons	% Change 1939 over 1938	3 Mos. Ending With Mar., 1939 Gallons	3 Mos. Ending With Mar., 1938 Gallons	% Change 1939 over 1938
Alabama	17,257	20,266	19,311	+ 4.95	55,773	53,282	+ 4.68
Arizona	7,662	8,758	8,681	+ 0.89	24,649	24,831	— 0.73
Arkansas	11,642	14,298	13,234	+ 8.04	39,774	37,140	+ 7.09
California	125,154	145,877	137,341	+ 5.75	405,324	387,928	+ 4.48
Colorado	13,411	17,995	18,389	— 2.23	46,770	46,876	— 0.23
Connecticut	20,561	24,363	23,757	+ 2.55	67,467	65,203	+ 3.47
Delaware	3,664	4,359	4,024	+ 8.33	11,691	10,926	+ 7.00
District of Columbia	10,305	11,854	11,214	+ 5.71	32,929	31,098	+ 5.89
Florida	34,743	35,594	33,338	+ 4.88	104,645	97,981	+ 6.80
Georgia	27,160	29,238	28,276	+ 3.40	84,461	79,519	+ 6.21
Idaho	4,809	6,488	6,117	+ 6.07	16,526	16,104	+ 2.62
Illinois	84,744	109,300	101,400	+ 7.79	285,127	268,830	+ 6.06
Indiana	39,136	54,499	50,834	+ 7.21	137,515	133,066	+ 3.34
Iowa	31,883	40,686	47,484	—14.32	107,002	108,438	— 1.32
Kansas	29,578	39,026	37,012	+ 5.44	99,108	96,575	+ 2.62
Kentucky	17,776	20,930	19,297	+ 8.46	59,674	55,270	+ 7.97
Louisiana	17,393	19,866	20,150	— 1.41	56,113	56,386	— 0.48
Maine	8,133	8,659	8,787	— 1.46	25,392	24,632	+ 3.09
Maryland	18,639	22,607	21,315	+ 6.06	60,613	57,840	+ 4.79
Massachusetts	44,274	52,319	52,676	— 0.68	144,279	136,800	+ 5.47
Michigan	72,413	81,610	78,997	+ 3.31	229,663	214,351	+ 7.14
Minnesota	28,447	38,020	46,310	—17.90	98,151	104,499	— 6.07
Mississippi	13,838	17,927	16,442	+ 9.03	45,075	45,203	— 2.08
Missouri	41,605	51,375	50,844	+ 1.04	139,815	134,589	+ 3.88
Montana	5,325	9,123	8,435	+ 8.16	20,757	19,414	+ 6.92
Nebraska	14,275	18,858	18,344	+ 2.80	49,698	47,265	+ 5.15
Nevada	2,547	3,131	2,374	+31.89	8,418	6,789	+23.99
New Hampshire	5,178	5,882	5,795	+ 1.50	16,792	15,604	+ 7.61
New Jersey	55,699	66,301	62,970	+ 5.29	179,469	170,442	+ 5.30
New Mexico	6,161	7,119	7,250	— 1.81	19,953	19,929	+ 0.12
New York	112,574	135,536	129,861	+ 4.37	373,695	355,498	+ 5.12
North Carolina	27,964	34,471	32,019	+ 7.66	96,869	87,724	+10.42
North Dakota	4,052	8,851	13,241	—33.15	18,450	21,705	—15.00
Ohio	84,951	107,743	102,558	+ 5.05	287,634	276,696	+ 3.95
Oklahoma	27,930	33,516	31,173	+ 7.52	92,266	87,265	+ 5.73
Oregon	14,295	17,850	16,260	+ 9.78	47,166	43,769	+ 7.76
Pennsylvania	92,214	111,826	105,848	+ 5.65	302,660	288,973	+ 4.74
Rhode Island	7,718	9,516	9,587	— 0.74	26,149	24,229	+ 7.92
South Carolina	14,979	17,887	16,453	+ 8.72	48,996	45,458	+ 7.78
South Dakota	5,917	10,785	12,529	—13.92	24,007	25,290	— 5.07
Tennessee	21,329	19,454	24,598	—20.91	66,198	66,432	— 0.35
Texas	95,601	111,787	107,236	+ 4.24	307,835	295,363	+ 4.22
Utah	5,668	7,393	6,592	+12.15	19,626	18,346	+ 6.98
Vermont	3,867	4,234	4,214	+ 0.47	12,257	11,456	+ 6.99
Virginia	24,974	29,982	27,970	+ 6.87	80,728	76,000	+ 6.22
Washington	21,591	26,521	25,504	+ 3.99	70,404	66,935	+ 5.18
West Virginia	13,015	15,749	14,413	+ 9.27	42,286	40,057	+ 5.81
Wisconsin	31,569	39,165	43,267	— 9.48	105,754	104,796	+ 0.91
Wyoming	3,665	5,324	4,254	+25.15	13,328	11,218	+18.81
Total	1,427,285	1,733,828	1,689,775	+ 2.61	4,709,031	4,514,020	+ 4.32
Daily Average	50,974	55,930	54,509	+ 2.61	52,323	50,156	+ 4.32
Change from previous year:							
Total change		+44,053			+195,011		
Percentage change in Daily Average		+2.61%			+4.32%		

"Gas Stocks" Again Lowered

NEW YORK, May 31.—Crude runs, gasoline stocks and stocks of residual fuel oils dropped at U. S. refineries in the week ended May 27, according to a report compiled by the American Petroleum Institute today.

Stocks of finished and unfinished motor fuels May 27 were down 392,000 barrels from May 20. Production of gasoline, the Institute's report shows, increased 41,000 barrels during the same period.

Operations at refineries reporting to the Institute were off 1.4 per cent, with daily average crude throughput down 55,000 barrels.

Stocks of gas oils and distillate fuels at refineries increased 579,000 barrels during the week, while stocks of heavy fuels were down 307,000 barrels.

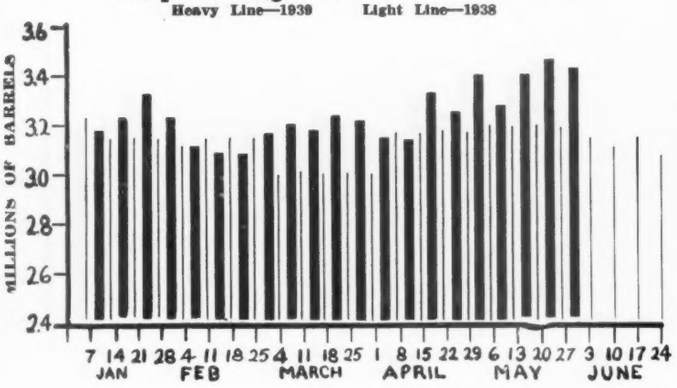
Chicago Fuel Oil Men to Golf

CHICAGO — The annual golf tournament of the Burning Oil Distributors Assn. will be held June 20 at the Medinah Country Club, F. B. Caldwell, secretary, announces.

Latest Oil Industry Statistics

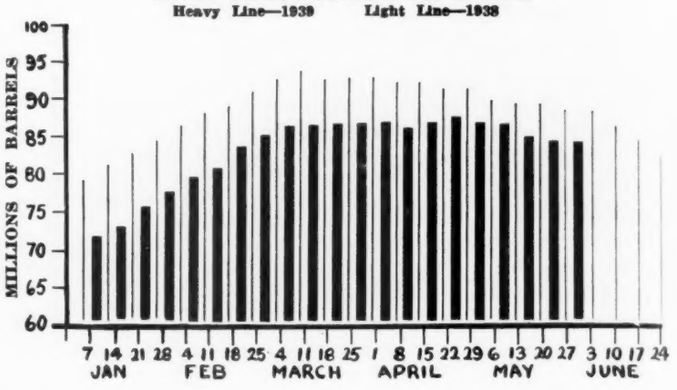
Daily Average Crude Runs to Stills

Heavy Line—1939 Light Line—1938



Total U. S. Motor Fuel Stocks

Heavy Line—1939 Light Line—1938



A. P. I. Weekly Refinery Report

(Figures in Thousands of Barrels of 42 Gallons Each)

Districts	Daily Average Crude to Stills Week Ended		Per Cent of Reporting Capacity Operated Week Ended		(a) Gasoline Production Week Ended		Stocks Total Finished & Unfinished Motor Fuel (b) Week Ended		Stocks of Gas Oil & Distillates At Refineries Week Ended		At Terms. Trans. Pipelines Week Ended		Stocks of Residual Fuel Oil At Refineries Week Ended		At Terms. Trans. Pipelines Week Ended	
	May 27	May 20	May 27	May 20	May 27	May 20	May 27	May 20	May 27	May 20	May 27	May 20	May 27	May 20	May 27	May 20
East Coast	527	520	85.7	84.6	1,443	1,466	21,642	21,533	2,499	2,345	3,982	3,905	2,949	(f)3,058	2,630	(f)2,290
Appalachian	109	107	85.2	83.6	388	413	3,581	3,594	244	232	57	50	429	445	....	....
Ind., Ill., Ky.	464	492	90.3	95.7	1,823	1,960	13,900	14,312	2,244	2,195	358	326	2,734	2,587	47	37
Okla., Kans., Mo.	286	284	83.6	83.0	(c)1,011	(c) 996	7,586	7,388	1,105	1,050	31	24	2,872	2,838	....	....
Inland Texas	125	126	78.6	79.2	527	543	1,648	1,642	289	290	....	....	1,644	1,614	....	....
Texas Gulf	834	866	93.2	96.8	2,619	2,628	10,423	10,754	3,408	3,116	538	627	5,197	5,028	174	173
La., Gulf	131	138	90.3	95.2	322	349	2,664	2,533	1,011	950	18	19	1,306	1,323	244	192
No. La., Ark.	42	43	74.5	78.2	100	116	515	534	243	247	9	10	561	563	....	....
Rocky Mt.	57	41	89.1	64.1	215	186	1,717	1,705	108	101	....	....	574	584	....	....
California	500	510	67.1	68.5	1,446	1,201	15,436	(f)15,499	8,541	8,607	1,707	1,715	60,358	60,772	25,407	25,631
Total Reporting	3,075	3,127	84.0	85.4	9,894	9,858	79,112	79,244	19,692	19,133	6,700	6,676	78,624	78,921	28,502	28,214
U. S. Total (d)	3,405	3,460			11,180	11,139	84,152	(f)84,544	20,292	(e)19,713	6,700	6,676	(e)80,884	(e&f)81,082	28,502	28,214
U. S. Total 5-27-38 (d)	3,201				10,533		88,394		22,074				110,677			

(a) Includes straight-run, cracked and natural blended.
(b) Includes stocks at refineries, in bulk-terminals, pipe lines and in transit.
(c) 12% of reporting capacity in this district did not report gasoline production.
(d) Estimated, U. S. Bureau of Mines basis.
(e) For comparability with last year these figures must be increased by stocks "At Terminals, etc." in California district.
(f) Revised.

Trends of Basic Figures

	May 27	May 20	May 27, 1938
Crude Production (Bbls. daily)	3,585,250	3,438,400	3,098,650
Crude Imports (Bbls. daily)	174,280	148,430	104,140
Crude Runs to Stills (Bbls. daily)	3,405,000	3,460,000	3,201,000
Gasoline Stocks (Bbls. total)	84,152,000	84,544,000*	88,394,000
Gas and Fuel Oil Stocks (Bbls. total)	136,338,000	135,794,000	†

*Revised.
†Comparable figure not available.

Crude Oil Production for the U. S.

(American Petroleum Institute Figures)

	Week Ended May 27 Barrels	Week Ended May 20 Barrels	Week Ended May 13 Barrels
Oklahoma	449,750	463,250	453,150
Kansas	161,750	175,550	176,250
Texas	1,462,000	1,285,350	1,269,000
Louisiana	267,950	267,350	269,600
Arkansas	55,100	55,200	54,150
Illinois	222,300	215,600	209,900
Eastern (Ill. excluded)	99,250	97,750	100,750
Michigan	63,850	63,900	63,700
Wyoming	60,700	60,600	57,050
Montana	14,650	14,700	14,250
Colorado	3,950	3,600	3,600
New Mexico	110,500	110,650	110,700
California	613,500	624,900	620,400
Total U. S.	3,585,250	3,438,400	3,402,500
Crude Imports	174,280	148,430	76,140
Total New Supply	3,759,530	3,586,830	3,478,640

Inventories, April 30, 1939, of Pennsylvania Lube Oils

(Compiled by National Petroleum Ass'n from reports of all companies which refine Pennsylvania crude oil. Figures in barrels.)

Raw Long Residuum (Including all raw long residuum below, and not salable, as 600 fire)	24,247
Steam Refined (Includes all steam refined stock commonly sold or used as 600 and as raw material for bright stocks)	157,467
Other Steam Refined (Not included in above items)	93,926
Finished Dewaxed Long Residuum	42,529
Bright Stock (Does not include any material reported in Finished Dewaxed Long Res.)	380,467
Viscous Neutral, below 180 vis. but not below 142 vis. at 100	123,848
Viscous Neutral, 180 vis. at 100 and above	167,493

Inventories, April 30, 1939, of Pennsylvania Oils Other Than Lubricating Oils

(Compiled by National Petroleum Ass'n from reports of oil region refiners. Figures in barrels.)

Naphthas and Gasolines	
(1) Straight run, unblended and/or unleaded, for sale as motor fuel	43,563
(2) Naphtha and gasoline, for sale for blending or further refining, or held at refinery for further distillation, reforming, blending or leading	444,151
(3) Below 65 octane, not included in (1) or (2) above	8,091
(4) 65 Octane and above	469,872
Salable naphthas other than motor fuel material (do not include refinery process naphthas)	32,003
Kerosine	87,903
36-40 gas oil (include furnace oil)	43,006
Fuel oil (not reported above)	22,679
Oils held as cracking plant charging stocks	248,045
Non viscous neutral	16,651
Wax distillate	88,349
Crude petroleum	9,519
Wax (lbs.)	5,728,954

Refining Technology

INCLUDING INTERNATIONAL PETROLEUM TECHNOLOGY

Dear Reader:

No matter how careful he may be the average newspaper or trade journal writer makes mistakes. Usually he is credited with good intentions and not given the lie direct.

We are sad to relate that Allen James was only 50% right in his story in the May 3 issue about the capacity for fried chicken of Ray Miller, vice president of the Natural Gasoline Association of America, last year.

James reported that Miller can eat three fried chickens at one sitting.

"It's a lie," says Miller. "I can eat six."

★ ★ ★

Warren Platt, editor, and Sam Weissenburger of the NATIONAL PETROLEUM NEWS staff recently were visiting Paul Blazer and F. W. Irwin of Ashland Refining Co. They inspected the refinery at Catlettsburg and saw the new construction work which has raised the plant capacity to 10,000 barrels daily and improved quality of product through installation of a polymerization plant and more cracking capacity. Another new feature they saw was the lube plant which has just been completed.

N. P. N. men always ask how we can improve our product when calling on refinery men out in the field. So Weissenburger asked Irwin how we can improve Refining Technology.

"Don't be too profound," Irwin advised.

That sounds like good advice. Most of us are interested in other people in the industry as well as in research processes, equipment and the like. Do you agree with Mr. Irwin?

★ ★ ★

This is a little sequel to the interview with Dr. T. G. Delbridge published in our May 3 issue, in which we mentioned his love for music and his electric organ. A few years ago Mr. and Mrs. Paul Blazer were on the same train with Delbridge enroute to an A.P.I. meeting at Los Angeles.

The three were talking about music as the train sped westward. Delbridge insisted that anyone who can play the piano well can get much more enjoyment out of the organ and play the newer instrument without difficulty.

To prove the point Delbridge insisted that the Blazers go with him to a music store in Kansas City when the train stopped there for a few hours. Mrs. Blazer was captivated and they bought it on the spot. Let that be a warning. If you don't want to shell out twelve hundred-odd dollars don't visit a music store with Dr. Delbridge.

★ ★ ★

The symposium on aviation fuels the last day of the A.P.I. meeting at New Orleans drew a crowded house. And it was running in competition with a number of trips and other attractions which might well have taken attention from a less well arranged program.

Dr. K. G. Mackenzie of The Texas Co., who is chairman of the program committee for the refining division, and Dr. R. P. Anderson of the A.P.I. permanent staff did an unusually good job in planning this symposium. In the first place the subject is most timely. A recent study by this publication of what articles are most popular at the moment revealed that aviation gasoline stood at the top of the list.

Not only was the paper prepared by Messrs. Heron and Beatty of the Ethyl Gasoline Corp. most comprehensive in its coverage of the subject, but arrangements had been made far enough ahead of time so that written discussion on the paper had been secured from the three most interested parties in the development of aviation fuels—the engine builders, the commercial air lines and the oil companies making aviation fuels and lubricants. This discussion was read by Chairman Haskell of The Texas Co., and then Author Heron, who presented the paper, was given an opportunity to answer the discussion.

The possibilities in improving aircraft performance through fuel research as brought out in this paper, are so great that the subject should have the attention not only of the technical men with the oil companies but with their chief executives as well. Too many oil men, as this paper points out, have visualized increase in octane number of aviation fuels as "merely permitting wider opening of the throttle of an existing engine in an existing airplane", in place of fuel development making possible the complete re-design of aircraft.

These authors bring out that still further increases in aircraft performance can be expected, derived from improved petroleum products, and they believe that this nation might well stress petroleum products in aircraft development, since it is a phase in which this country is particularly strong in respect to raw-maerial supplies, manufacturing capacity and technical skill—a combination to be found in no other nation.

Very Truly

J. C. Chatfield

Managing Editor,
Refining Technology Edition.

S.A.E. Debates Test Methods For Service Qualities of Lubes

ABSTRACT.

Use of the Underwood apparatus, first introduced for corrosion tests of bearings, is now being used successfully in General Motors laboratories to predict oxidation characteristics of motor oils under specific service conditions. High oil stability, as measured by the Underwood oxidation apparatus is shown to be related to good engine performance. What oxidation products are formed and how much, as well as amount of inhibitor, are determinable.

Holding to engine tests as the most satisfactory method of predicting motor oil quality, Dr. Everett of Penn State has found it practical to drop from full-size engines to single-cylinder commercial engines in which he can simulate conditions in the larger engines. Lowered expense of testing is a major objective.

Such tests are upheld in Esso Laboratories, particularly for sludging tests. The development of the principal tests for lubricating oil are discussed along with their limitations, needs for still further work, and the more promising directions for research are indicated.

BY CORRELATING Underwood oxidation tests on oils and the performance of these oils in engines of different designs under the different operating conditions, it is possible to predict from the laboratory test data the oxidation characteristics of the oils under specific service conditions."

From data presented by H. C. Mougey, General Motors Corp., at the World Automotive Engineering Congress in New York, May 23, it was shown that high crankcase oil stability, as measured by the Underwood oxidation apparatus is definitely related to good performance in engines with high crankcase oil temperature, or in those in which the undersides of the pistons are sufficiently hot so that the effect on the oil is the same as if the crankcase oil temperature were high. Mr. Mougey pointed out, however, that for low crankcase oil temperature operation, or its equivalent, other properties may be the deciding factor.

Summarizing the results of many engine tests and laboratory tests of lubricating oils, Mougey showed that by means of the Underwood test an oil can be tested to determine whether or not it will oxidize, and, if it does oxidize, what products, acid, sludge, etc., will be formed and in what amounts. In addition he can determine the amount of inhibitor in the oil, by adding measured amounts of a catalyst, and find out how much catalyst is necessary to neutralize the inhibitor whether natural or added.

Furthermore, the oxidation characteristics of the oil without inhibitor can be determined by adding enough catalyst to counteract the effect of the inhibitor in the oil and then oxidizing the oil. This test indicates the character and amount of oxidation products which may be expected when the oil is oxidized in the engine under conditions where the inhibitor is not effective, for example, on the cylinder walls or in the combustion chamber, Mougey said.

Engine runs under controlled conditions and road tests showed the conditions under which various oil properties are important. High crankcase temperatures were found to lend importance to oxidations in the crankcase, resulting in increase in viscosity and formation of acid or sludge or both. The degree is dependent upon the properties of the oil and the amounts of inhibitor and catalyst that may be concerned. Decomposition of sludge on hot surfaces, decomposition of the oil in the combustion chamber to form carbon, and the contamination of crankcase oil are important under certain engine conditions which may be determined. Formation of "varnish" as the result of further oxidation or baking of partially oxidized oil or sludge can also be watched under controlled conditions.

These engine tests showed clearly, Mougey said, that under the conditions of these tests the most important factor studied was crankcase oil temperature. Other variables such as load, speed, ventilation, and piston temperature do not show much effect, within the limits of the test conditions, on the formation of sludge or varnish. With high quality oils crankcase oil temperature could be higher but was still important.

Mr. Mougey traced the history of oxidation tests back to the World War when engineers fought over whether oil stability could be measured best by heating it to a very high temperature in the absence of air (Conradson carbon test) or to a relatively lower temperature in the presence

Chairman of S.A.E. Meeting

Chief Technologist B. E. Sibley of the Continental Oil Co., Ponca City, Okla., has been named chairman of the fuels and lubricants meeting of the World Automotive Engineering Congress of the Society of Automotive Engineers, which begins an extended meeting in New York on May 22.

The congress began its convention in New York May 22 then it moved to Indianapolis to attend the 500-mile automobile race. It will journey to Detroit for automobile factory inspection tours lasting three days. The final three-day session of the congress will be held in San Francisco June 6 to 8.

Sibley was elected a vice president of the S. A. E. for 1936, in addition to having served on its technical research committees dealing with aircraft, bearings, and interior engine design and lubrication. He has been associated with the Continental company for 27 years.

of air (Waters test). The importance of stability did not become so important until more recent years. The Indiana oxidation test was offered in 1933. In this test air is bubbled through the oil at 341° F. until sludge is formed. The containers are made of glass.

It was then found that the performance of oils in engines, in regard to oxidation, depended to such a great extent upon the effects of catalysts and inhibitors that no real study of the problem could be made without taking these factors into account. The engines in which the oils are used are made of metals, and most metals, including iron and copper, are powerful oxidation catalysts.

The Underwood corrosion test was first described in 1935. This apparatus is simply a device for heating and circulating oil and spraying it forcefully against test bearings or metal strips. Since, like the automotive crankcase, the oil has access to air, oxidation also takes place and plays an important role in the test.

Results of Underwood tests on three oils used in the service tests showed practically identical "naphtha insoluble" and "chloroform soluble". Sludging, lacquer, and asphalt in the used oil agree with the Underwood data. The engine data on carbon in the ring band are not quite as definite, but it appears that the sludging tendencies as shown by the Underwood data are closely related to this property as well, Mougey said, at least they are of some interest in "oil consumption". It was concluded that the key to the interpretation of laboratory test data and desirable physical and chemical properties is still missing in regard to ring sticking.

Full-Size Test Engines Simulated

Because the reliability of the various properties of lubricants as indicators of performance is not good, Dr. H. A. Everett, The Pennsylvania State College, holds to the testing of lubricating oil stability in test engines. Even if these properties were good at the moment a lubricating oil were first put in an engine crankcase, "these indicators begin to change, some rapidly, some slowly, some (like viscosity) first decreasing then increasing, and others progressively changing in the same general direction, but all changing. . . . The ultimate objective sought is an evaluation of the service performance of the lubricating oil in the actual engine."

For several years the Pennsylvania State College, in cooperation with the Pennsylvania Grade Crude Oil Association has carried on full scale performance tests on lubricating oils. These tests Dr. Everett believes have been made with a technique which has made possible unusually accurate and comprehensive data on the progressive deterioration of various oils in engines under service conditions. However, involving as it does the simultaneous operation of four or more six-cylinder engines at high power and speed over long periods, such tests require large quantities of test oil. Inevitably these tests are expensive. Hence the possibility of using small scale reproductions warranted investigation.

Dr. Everett discussed the factors involved in simulating full-size engine units in reduced scale models as well as in single cylinder commercial units of small size which were decided upon for the tests. Since carbon deposits play an important part in engine operation and oil punishment and "there is not in existence at the present time any good indicator of the carbon depositing proclivities of an oil . . . it was considered desirable to develop first a method which should co-ordinate carbon depositions between model and prototype, then later to tackle the broader problem of stability in general."

The chronological order in which the work of coordinating the small engine with full-size engines was then given. The engines selected for the tests were six single-cylinder Delcos and six similar engines made by the Lauson Co. The first series of 24-hour tests indicated that carbon formation is materially influenced by the oil consumption. During the first 30 hours of test the units with high oil consumption formed carbon about twice as fast as the units with normal consumption, but the ratio

Contents...

REFINING TECHNOLOGY

May 31, 1939

No petroleum product has been more a subject for heated debate as to its service properties than lubricating oil. Test after test has been developed in attempts to show in the laboratory what service to expect from a motor oil in road service only to be discarded or modified repeatedly. Three S.A.E. papers presented before the World Automotive Congress describe applications of existing or modified existing tests and general progress in the evolution of the principal motor oil test methods R-226

Diesel fuel dopes, one of most promising methods for improving ignition quality, may become necessary to produce the combination of high cetane number and low cloud and pour points. Acetone peroxide and ethyl nitrate are discussed as among the most satisfactory additives R-230

A rational classification of the various types of boundary lubrication can be drawn up on the basis of the mechanical conditions in the region of contact between the rubbing surfaces, automotive engineers are told at recent world congress. H. Blok, Delft Laboratory, Royal Dutch Shell, termed the mechanical side of boundary lubrication the "missing link" and said sufficient knowledge of this phase of the lubrication problem has only recently been obtained R-232

A midget plant for production of iso-octanes by selective polymerization and hydrogenation was described to the A.P.I. meeting at New Orleans by W. B. Shanley and Gustav Egloff of Universal Oil Products Co. Also given was operating results of five midget polymerization plants processing gas from different types of cracking stock R-234

V. I. Downey has been appointed superintendent of refining for National Refining Co. Recently he has been lubricating oil sales engineer but previously was chief chemist and technical advisor to the management R-242

Activities of Equipment Manufacturers ... R-243

New Patents R-244

Advertisers' Index ..... 79 and R-243

Other Table of Contents 19

H. C. Mougey is chief chemist of the research laboratories of General Motors at Detroit. Since he joined the company in 1917 he has worked closely with the oil industry on automotive lubrication problems

of the oil consumptions was about five to one. This was said to be of particular importance as it indicates that comparison of carbon deposits is unreliable unless adjusted to the basis of a common oil consumption.

Adjustment for variations in oil consumption was made on the basis of observed weights of carbon deposited. "While the precision of measurement of the carbon deposits (1/1000 gram) might hold expectation of an accuracy of a few per cent, the vagaries of carbon formation were materially higher and it is doubtful if the accuracy of individual results is significant closer than about plus or minus 10%." However, it is believed that tests by this method still will correctly select oils that are good or bad as to carbon formation and permit a classification sufficiently accurate for general purposes.

In comparison of data with similar data from the large engines, the outstanding feature is that the small engines caused less sludge and that the rise in viscosity in eight hours of operation is appreciably greater for the small engines. When the sealed crankcases of the small engines were opened for ventilation, however, the sludge was increased to reasonable agreement with the large engines. The viscosity also increased until it was considerably higher than that of the large engines.

This was corrected by providing more uniform cooling of the cylinders. A 50°-drop in head temperature resulted along with reduction in viscosity to a value reasonably coincident with that of the large engines but sludge values were back again to values somewhat less than in the large engine. This was corrected again by augmenting the crankcase ventilation. The final change was to substitute specially made piston rings of slightly more uniform finish dimensions. A final test showed that the results were "sufficiently in agreement with those obtained in the full size engines to warrant the acceptance of the use of this battery of small engines and the technique developed for predicting the punishment inflicted upon lubricating oils in full sized engines.

"It is believed it can be relied upon as a pilot plant for quickly and inexpensively exploring the field of additives and trick oils. However, it should not be relied upon for accurate quantitative comparisons such as can be obtained from the battery of full size engines. The latter give more reliable results but at a much greater cost in these important items: time, money, and oil tested."

Laboratory Test Development

The progress which has been made in the development of laboratory test techniques for evaluating motor oil quality was discussed in a paper by F. L. Miller, J. F. Kune, Jr., and R. W. Richardson, all of Standard Oil Development Co. In general they found that "in most cases adequate laboratory methods for predicting the different qualities are not available." Indications were given as to the direction in which the most promising development lay and it was shown that existing tests were not without some merit.

It is interesting to note that their findings were in agreement with the paper by Everett, particularly in relation to sludging tests. "The mechanisms by which sludge may be formed in an engine being so complicated and so many variables being involved, it seems doubtful whether a single laboratory oxidation test which will substantially predict the sludging characteristics of motor oils in service can be devised. However, in the light of present-day knowledge, it should be possible to improve or alter the existing test methods so that they will apply more adequately to the problems encountered. It may be that the most suitable solution to the question of motor oil sludging tests . . . lies in the development of tests utilizing a standardized single-cylinder engine under one or more sets of closely controlled operating conditions. It is common knowledge that this method of attack has proven quite successful in the evaluation of motor fuel quality, and possibly some advantages could be gained by its application to the question of motor oil quality."

The fact that the results of tests such as the Indiana oxidation test do not correlate with the sludge-forming characteristics of motor oils in service indicates quite definitely that the mechanism involved in the formation and deposition of the most of the sludge deposits usually found in gasoline engines is not one of oxidation of the crankcase oil at relatively mild temperatures and in thick films, as is usually the case in laboratory tests. In general, it appears that the largest share of the sludge (exclusive of the water or "mayonnaise" type) is the result of contamination from sources outside the crankcase, or of the decomposition of the lubricating oil while it is exposed to high temperatures in relatively thin films. "Only in the case of improperly refined oils is it probable that much sludge is formed by oxidation of the oil in the crankcase itself."

MOST of the laboratory stability tests were found to be lacking in other respects. One of their failings is that they measure the tendency of an oil to oxidize at only a single fixed temperature with a fixed rate of air or oxygen supply. Still another serious drawback to such tests is that they are most often run in glass equipment with no metals present.

In the matter of carbon formation, the portion which comes into actual contact with the surfaces of the chamber was said to be primarily responsible for the bulk of the carbon formed. This being true, it follows that the surface temperature within the combustion chamber and the volatility characteristics of the oil reaching these surfaces are both important in determining the extent of carbonization which will occur.

Although volatility tests would appear to offer the most promise for evaluating the carbon-forming characteristics of motor oils, neither the Conradson test nor the Ramsbottom test which correlates with it are found to be reliable criterions of carbon-forming characteristics. The "Carbonization Index" method is believed to have considerable merit for predicting the carbon-forming characteristics of motor oils but vacuum distillations carried out at 1 mm. pressure are extremely difficult to duplicate. It should be possible to simplify and improve this test method by carrying out the distillation at a somewhat higher pressure, for example, at 10 mm., it was indicated.

Tests for qualities relating to oil consumption and ease of starting appeared to be more satisfactory than others since viscosities of the oil represent the most important factors in both cases. The ring sticking problem, on the other hand, is particularly confused, it was stated. No really satisfactory laboratory tests have as yet been devised. The only means of studying ring sticking characteristics of motor oils has been through the expensive and time-consuming method of running engine tests. Even this method is not entirely reliable, since it is obviously impossible to run even one type of engine under all the conditions which will be encountered in the field.

Probably the most reasonable explanations of varnish

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Prof. H. A. Everett, head of the department of mechanical engineering at Pennsylvania State College, is in charge of the elaborate engine test laboratories sponsored by the Pennsylvania Grade Crude Oil Assn. The laboratory was equipped with a battery of 6-cylinder engines for lubricating oil testing more than five years ago

formation, it was indicated, are those given in NATIONAL PETROLEUM NEWS, Feb. 22. However, no satisfactory laboratory tests have as yet been evolved for predicting the varnish-forming characteristics of lubricants. It is felt that the solution of the problem of developing tests to predict varnish formation probably will be found by a rather complete study of the nature of varnish deposits and an investigation of the effect of metal catalysis upon their formation. Perhaps such tests as the Underwood or Indiana test, conducted in the presence of metal catalysts, will be of some significance, it was indicated. In general, the tendency to form varnish seems to be related in some manner to the crude source and the method of refining the oils. One of the possible methods of combatting it appears to lie in the use of suitable inhibiting agents. These must be very carefully selected, however, because their effectiveness will vary widely and a number of so-called "inhibitors" have been found to promote the formation of varnish.

Although many procedures showing certain degrees of promise have been developed for corrosion tests, the most successful and the one most extensively used by the authors has been one involving the use of the Underwood apparatus. The variation of the method found most successful utilizes a somewhat modified Underwood apparatus in which all of the brass or copper piping, which acts as a strong oxidation catalyst but which cannot always be cleaned between tests to give completely reproducible results, is replaced with iron. The tetst is run at 350° F. Loss of weight of a bearing is plotted against elapsed time. A sharp break in this curve serves in indicating the "life" of the oil.

Additives have some value in corrosion prevention. Additional work on the problem is needed, it was stated. The present Underwood apparatus, although a valuable tool, has a number of weaknesses, one of which was lack of reproducability. Another is that control of the air which gets to the apparatus is inadequate. An instrument which will incorporate the principal features of the Underwood method, namely, heating, aeration and oxidation, and maintenance of oil agitation at the bearing surface, and is capable of improved control is in the process of development by Esso Laboratories and may be soon available.

Wear does not appear to be a serious problem in currently produced automotive types of gasoline engines when operated on uncompounded well-refined oils but there is a definite need for thorough investigation of all of the factors involved in engine wear in order that satisfactory laboratory test methods for predicting this property may be evolved, it is believed. As yet there are very few data available on the relationships existing between the film strength, "oiliness", or coefficient of friction of oils as determined on the various available test machines and their wear characteristics in actual engine service. A co-operative research program on wear now being sponsored by the SAE is a step in the right direction.

231.6
817.

Dopes Promise Improvement In Diesel Fuel Quality‡

By J. J. Broeze and J. O. Hinze *

ONE of the most promising methods for improving the ignition quality of diesel fuels, if such improvement is necessary, is the use of dopes. The necessity for the combination of high cetane number and low cloud and pour point particularly can hardly be met by any suitable straight run or cracked fuel. While the use of low boiling fractions seems to make an exception, these have the disadvantage of greatly reducing the output of suitable fuel and the risk of involving too low a viscosity for diesel engine practice.

For a pour point below —40° F., which is required by the U. S. Navy and Army Air Corps, a fuel with a cetane number of 30 to 35 must usually be employed. By solvent extraction of this fuel a fuel with a cetane number of 55 may be obtained which retains about 50% of the basic material. This method, therefore, has the same disadvantage of greatly reducing the output of suitable fuel as the use of low boiling fractions. Moreover, by solvent extraction the pour and cloud points are often raised also, whereas the additional use of pour point depressors would cause a corresponding decrease of the cloud point, i.e., in the temperature at which filter troubles may appear.

On the other hand, the use of a dope would require addition of a minimum of 2.5% to 3% by weight of even the most effective dopes for bringing the cetane number up to specifications. This will call for an increase of some 20 to 25 cetane numbers.

Hence, to meet such a special fuel requirement the most efficient way would appear to start from fuels with a low pour point (non-waxy fuels) which may be extracted to give cetane numbers up to 40, and then add 1% to 1.5% dope. In other cases, where a total increase of not more than about 10 cetane numbers is required, only the addition of dope would do. Of course, one of the other treatments mentioned above may be used. Which of them will be preferred, however, depends also on economical considerations.

A dope which has to improve the ignition quality of a fuel has to fulfill other requirements in addition to being as effective as possible. It must be soluble in the fuel up to high concentrations, it should not be soluble in water, it should not be influenced by acids (unless the fuel be previously soda treated), and it must have a high degree of stability in storage. It must not be explosive under moderate temperature conditions when in solution. Its manufacture should be reasonably easy, it should not have corrosive properties, and it should be inexpensive.

Not all of these requirements can be fulfilled to the same degree without influencing each other. Some of the requirements are more or less contradictory. For example, the effect of a dope during the ignition period of the fuel in the engine is due exactly to its highly unstable character at higher temperatures, or to put it in other words, to the fact that the dope molecules are easily activated, implying at the same time a greater chance of unstability at lower temperature.

Many diesel dopes have been mentioned in technical and patent literature but only a few of them fulfill the above mentioned requirements in a satisfactory way. The latter dopes belong mainly to the class of nitrates and peroxides. The experience of the authors has been that best results are obtained with acetone peroxide. Good results are also obtained with ethyl nitrate, apart from some corrosion troubles.

(*Continued on page R-244*)

*"Delft" Laboratory, Royal Dutch Shell.

‡This is a condensation of a paper presented at the World Automotive Engineering Congress of the Society of Automotive Engineers in New York, May 22. Original title of the paper was Experiments with Doped Fuels for High Speed Diesel Engines.

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Finds Temperature, Not Pressure Controls E. P. Lubrication

EXTREME pressure (E.P.) lubrication, a term which has been used up to the present in referring to extreme boundary lubrication, should logically be replaced by the latter term, as it may be shown that in this type of boundary lubrication it is more the high temperatures than the high pressures that control bearing seizure. Terms like oiliness, film strength, etc., could better be discarded as they are only very vaguely defined and thus readily give rise to confusion.

These conclusions were expressed by H. Blok, Delft Laboratory, Royal Dutch Shell, at the World Automotive Engineering Congress of the Society of Automotive Engineers in New York, May 24. Title of the paper was: Fundamental Mechanical Aspects of Boundary Lubrication.

Many exacting details on the mechanical side of the boundary lubrication problems were covered in Mr. Blok's paper. This discussion dealt with such factors as the distinction between concentrated and dispersed contact between bearing surfaces and their relation to rubbing wear, the effects of motion on surface contacts, oil wedge formation, frictional stresses, and the effects of temperature and impact loading.

A classification of boundary lubrication, based on all of these mechanical conditions, would become much too complicated for pratical use, Blok pointed out, and a compromise has therefore to be made. After careful consideration it was found that a suitable classification could be based on only two factors. These are the magnitude of the mean (sometimes apparent) contact pressure in the region of contact and the magnitude of the mean temperature in the surface(s) of actual contact.

According to this method of classification, four main types of boundary lubrication may be distinguished. These were distinguished as low pressure and low temperature boundary lubrication (named "mild boundary lubrication"), low pressure and high temperature boundary lubrication (named "high temperature boundary lubrication") high pressure and low temperature boundary lubrication (named "high pressure boundary lubrication"), and high temperature and high pressure boundary lubrication (named "extreme boundary lubrication"). It has been impossible so far to establish definite limiting values to these classes but the differences may be shown to be very characteristic, Blok said. It is self-evident that in practice, machine parts will usually not operate continuously under constant conditions, so that shifting may occur from one type of boundary lubrication to another.

Only pure sliding is possible in mild boundary lubrication as the mean apparent contact pressure in the region of contact is by definition low. Dispersed contact is in this case characteristic. Both external heat and frictional heat are negligible. Hence low-speed sleeve bearings, leaf springs, many kinds of pivots, hinge joints and the like are representative of this type.

High temperature boundary lubrication is also pure sliding at low pressure. High temperatures in the surfaces of actual contact may either be chiefly composed of high bulk temperature or of a high temperature flash. The first may be caused by external heat (engine cylinders) or by accumulation of frictional heat (clutch plates). The most important examples in which high bulk temperature is caused by external heat are to be found in the lubrication of cylinders of superheated steam engines and internal combustion engines (especially aero engines). For this kind of service it is particularly difficult to find suitable anti-scuffing or anti-wear dopes, as they may easily be affected by the high temperatures. Therefore, improvement of the rubbing surfaces, e.g. by surface treatments seems to be the best solution.

At higher rubbing speeds high temperature flashes on the surfaces of actual contact occur and a copious oil supply is needed for cooling. There is a danger of seizure but as the bulk temperature is comparatively low, a combination of a soft, low-melting and of a hard rubbing surface is possible here and therefore common. Just as in mild boundary lubrication, the lubricant is often improved by dopes, consisting of polar molecules capable of being adsorbed firmly on the rubbing surfaces.

High pressure boundary lubrication is not to be confused with extreme boundary lubrication. In these two types, however, concentrated contact is characteristic and the mean pressure is high in both. High pressure boundary lubrication is only to be expected in cases where both the effects of external and those of frictional heating are negligible, it was indicated. Examples are primarily all cases of rolling contact, i.e. all anti-friction bearings, but also, for instance, the lubrication of those points on spur gear teeth which are only subjected to pure rolling. One of the chief functions of the lubricant seems to be the removal of the wear particles.

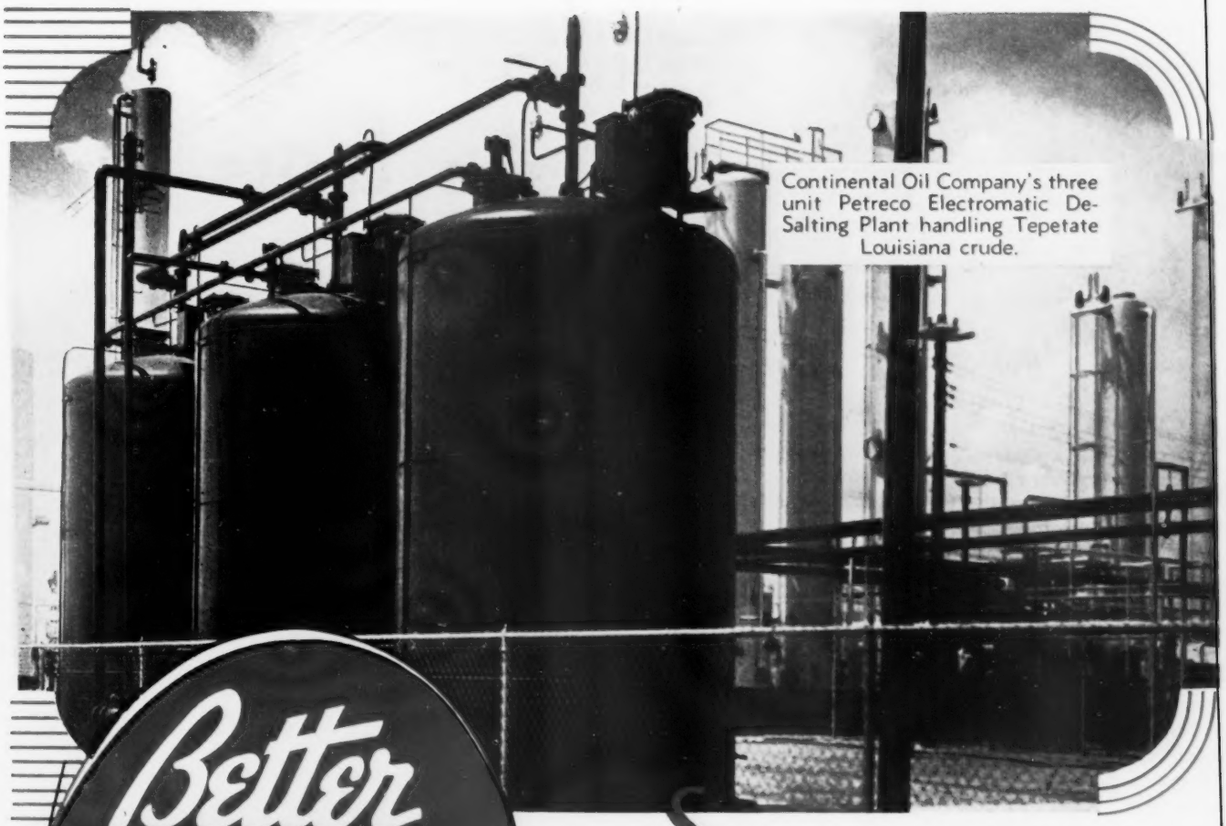
Concentrated contact at high mean temperature of the surface of contact is characteristic of extreme boundary lubrication. This high mean temperature may be caused by external heating as well as by frictional heating. Highly loaded hypoid gears are a classical example of extreme boundary lubrication. Hard rubbing surfaces are invariably used, but even then seizure will occur when straight mineral oils are used, if the local temperatures are higher than 300 degrees to 400 degrees Fahr. Specially doped E.P. lubricants, are generally used.

The temperature, not the pressure, in the surface of contact is decisive as regards the occurrence of seizure. There are even many indications that seizure occurs only as soon as a definite "temperature at seizure" has been reached. In cases investigated by the author, this temperature at seizure, which could be characteristic for any combination of rubbing materials and lubricant, was found to be almost independent of the pressure in the surface of contact and of the temperature of the lubricant in bulk, provided that the chemical composition of the lubricant in bulk was not changed by this last factor.

It is evident that efforts should be made to lower the local temperature under conditions of extreme boundary conditions, Blok said. The main component of the local temperature, the temperature flash, should first be lowered. This might be accomplished, inter alia, by designing gears in such a way that their engaging conditions and the material's thermal properties are favorable in this respect, it was pointed out. Lowering the bulk temperature alone is not nearly so effective, as in the typical cases of extreme boundary lubrication, the temperature flash predominates by far over the bulk temperature.

The sulfurized, chlorinated or phosphorized dopes or bases now widely used are chemically active, particularly at the high local temperatures. According to current ideas, the upper layers of the rubbing surfaces are changed chemically and so prevent seizure of the rubbing material below these layers. A low chemical reactivity at the temperature of the oil in bulk is aimed at in order to prevent undue corrosion.

In the future, the various aspects of boundary lubrication: physico-chemical, chemical, metallurgical and mechanical, will have to be considered jointly, Blok stated in conclusion.



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Midget Polymerization And Midget Iso-octane Units[1]

By W. B. Shanley[2] and Gustav Egloff[2]

ABSTRACT

Universal Oil Products also has designed a midget iso-octane unit for the production of aviation gasoline blending stock. Several units with capacities as low as 50 barrels per day have been designed for installation in foreign countries. At the present moment such units are not economic here. The process involves polymerization of olefins followed by hydrogenation of the polymer to iso-octanes.

Less than a year ago the first Midget poly unit was installed. Today there are over 50 in operation, building or being designed. The amazing growth is due to low first cost and high value of product. This paper reports on the operation of five units operating on gases from differing cracking stocks.

THERE are over fifty U.O.P. catalytic polymerization units in commercial operation, design, or under course of construction at the present time. The capacities of these units, processing cracked or olefin containing gases range from 125,000 cubic feet to 27,000,000, or on a gasoline (81 octane) production basis from 18 barrels to over 2500 barrels daily. The combination of selective catalytic polymerization and hydrogenation units produce from 50 barrels (Midget size) to 800 barrels of iso-octane fuel per day. The increased yield of gasoline ranges from about two to eight per cent with an octane rise of one to two numbers on the refinery gasoline output when processing naphtha, kerosine, gas oil, or topped crudes.

The midget catalytic polymerization units are particularly adapted to the small refinery due to the low cost of installation and the increased yield and quality of the gasoline produced. The cost of units processing cracked gas at the rate of from 125,000 cubic feet to 1,500,000 cubic feet (arbitrarily called "midget units" daily gasoline production 18 to 215 barrels) is approximately $15,000 to $35,000. Some of the midget poly units have paid installation costs in less than 40 days[3].

There is no cracking unit operating commercially today that is too small or too large to install a catalytic polymerization unit in order to increase the volume and quality of the gasoline produced from a given cracking stock.

Midget Poly Units

Midget catalytic poly units are in operation in many refineries. Five of these poly units have been selected for this study due to the differences in cracking stocks such as naphthas, gasoline, topped crude, combination of topping and cracking, and the variation of olefin content of the cracked gases produced which ranged from 19 to 41%. These poly units process daily from 125,000 cu. ft. of cracked gas in the smallest unit to the largest size of 800,000 cu. ft. The polymer gasoline produced by the smallest unit is approximately 18 barrels per day while the larger unit gives about 100 barrels a day.

Midget poly units consist essentially of a heater, catalyst vessels, cooler, and a stabilizer. In order to minimize the size of the equipment required and that a long catalyst life may be obtained, these units are operated at elevated pressures. Since the charge to these small units is available either at separator pressure or stabilizer pressure, namely, at 50 to 200 pounds, a compressor is required to compress the gases to 500 lbs. in addition to the equipment outlined. The material used in the construction of these units is standard in every respect with no special alloys

1. Presented before the American Petroleum Institute, New Orleans, May 15.
2. Universal Oil Products Co.
3. Foster, Natl. Petroleum News, 30, No. 32, 371 (1938).

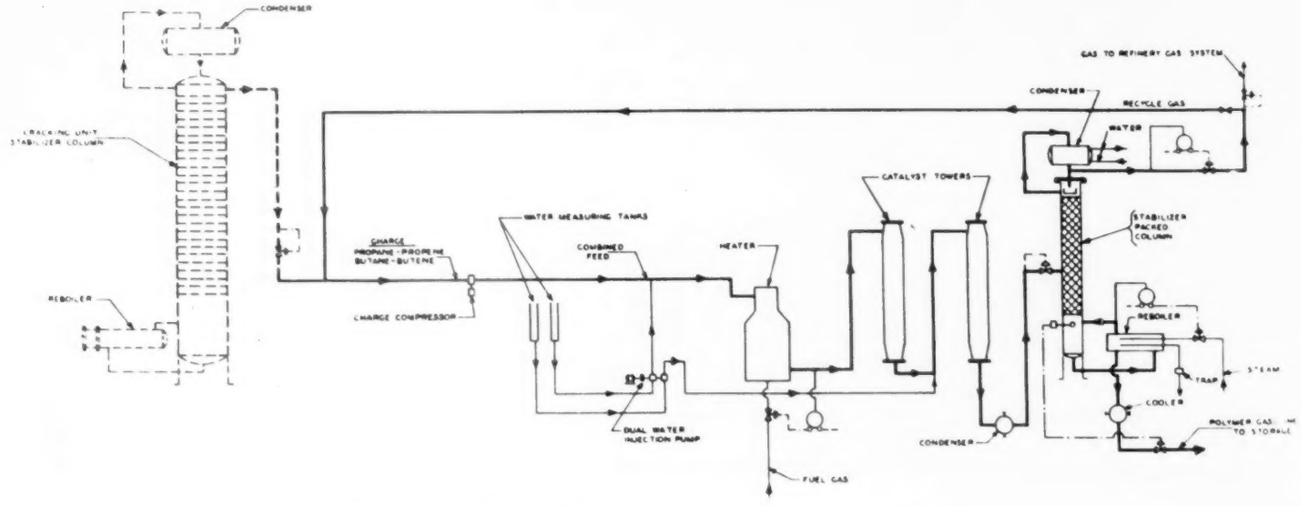
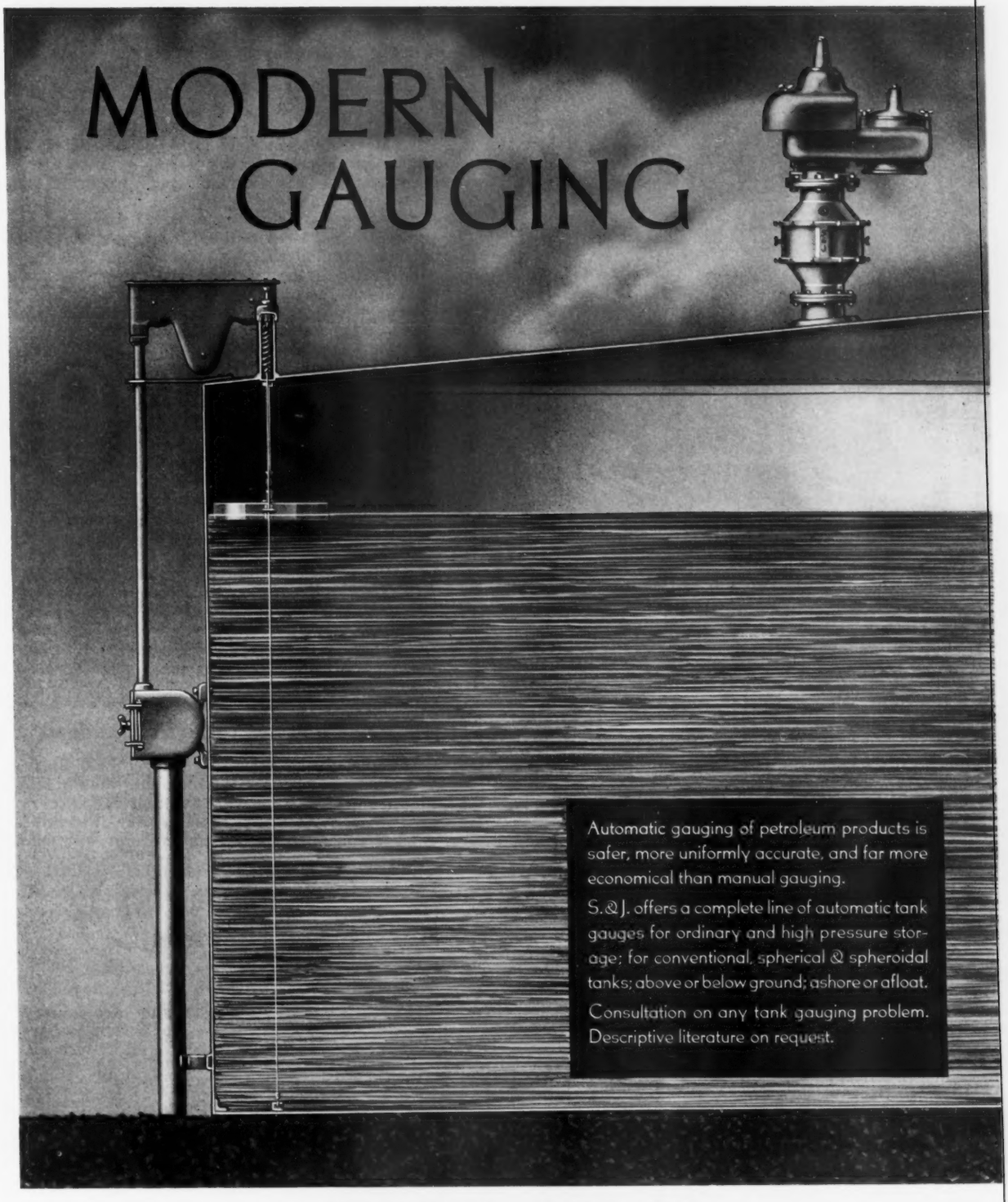


Fig. 1—Flowchart of U.O.P. midget catalytic polymerization unit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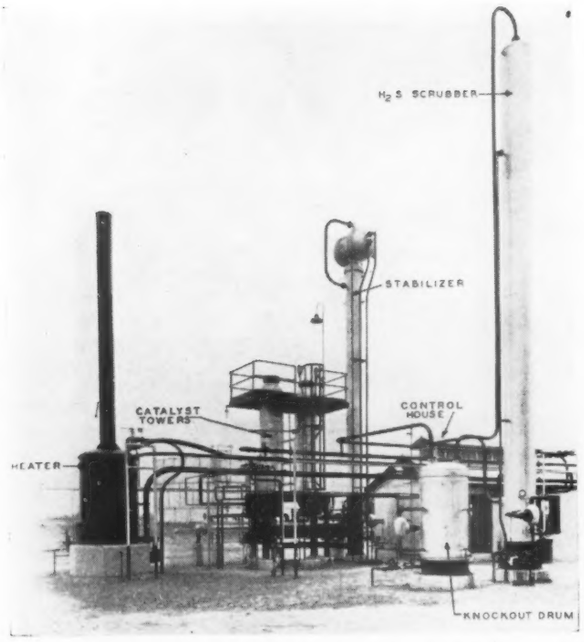

Midget polymerization unit built for Mohawk Petroleum Co.

necessary. The stabilizers used are of a packed column variety rather than the bubble deck type.

In the operation of these units, the poly plant charge is picked up by the compressor and discharged to a heater where the temperature of the gas is raised to the order of 350-400° F. The gas so heated is then passed in series through two tubes usually made of 24 inch pipe filled with solid phosphoric acid catalyst upon whose surfaces the reaction takes place. The polymer product leaving the last catalyst vessel is then cooled to temperatures of the order of 165° F. and discharged directly into the stabilizer where the polymer together with the required amount of butanes to give the desired vapor pressure is separated from the balance of the gas called "spent gas." A schematic outline of midget poly units is shown in Fig. 1.

The poly units are so constructed that the operating conditions are automatically maintained and the amount of control necessary is similar to that required by a stabilizer or an absorber. The compressor is so hooked into the gas system and the gas from the stabilizer discharged in such a manner that a constant gas flow is maintained through the system. The hook-up is arranged so that the poly plant can be cut in or out at will without interrupting the cracking plant stabilizing and gas disposal system. Automatic controls are used to hold a constant inlet temperature to catalyst towers; a similar control is provided for the stabilizer reboiler. Pressures are regulated at the outlet of the catalyst towers and poly stabilizer. By proper manipulation of factors affecting catalyst bed temperature, high olefin conversions and long catalyst life are obtained.

In some refineries where the olefin content of the cracked gas is high, a portion of the spent gas is recycled with the fresh feed in order to control the temperature rise which takes place in the catalyst vessels and which uncontrolled, would yield a product having a high percentage of material boiling outside the gasoline range. The polymerization operation is completed on discharging the spent gas to the refinery fuel system and the gasoline to storage. The stabilizer gas has in general a Btu. content of about 1700 per cu. ft. which is reduced to 1300 after passage through the poly unit. The reduction in volume of the stabilizer gas is about 27%, which corresponds to about six gallons polymer gasoline per 1000 cu. ft. of cracked gas processed.

In general, it has been found that the most advantageous type of cracked gas to process is derived from the stabilizer. Two-thirds of the polymerizable hydrocarbons which are produced in cracking are included in this stabilizer gas stream. Since the average quantity of stabilizer gas produced is generally one-third of the total gas produced in cracking, it is therefore possible to produce two-thirds of the maximum yield of polymer in equipment one-third the size of that required for processing the total cracking plant gas. However, from a process standpoint, it is entirely feasible to treat the total gas produced in cracking. The latter type of charging stock is to a certain extent advantageous since its lower olefin content makes the matter of obtaining proper temperature control, on which catalyst life is somewhat dependent, much simpler. There are poly units operating which process both types of gas as a single stream of compressed gas.

As the catalyst loses activity, the temperature rise due to the polymerization reaction decreases, as also the average temperature of the catalyst. To correct this condition and to maintain the higher temperature less recycle gas is used, which increases the olefin content of the combined feed, hence a temperature rise in the catalyst bed. By this manipulation of the recycle gas volume and the inlet temperature to the catalyst reactors, the average catalyst bed temperature can be adjusted to losses in catalyst activity, thereby increasing the catalyst life, and producing high olefin conversion. A number of the midget plants in commercial operation are still operating after five months with the same catalyst charge. During five months of operation there has been little decrease in catalyst activity. One of the units has produced polymer in excess of 70 gallons per pound of catalyst. The life record of a catalyst and its activity over a five-month period indicates at least double the present life.

The utilities required for a unit processing 500,000 cu. ft. of gas are: fuel—650,000 Btu's. per hour, water—4000 gals. per hour, process steam—550 lbs per hour, compressor power—35 h.p.

The operation of these units is simple. No additional labor is required as the cracking plant operators also control the midget poly units.

Cracked Gases to be Polymerized

Five commercially operating midget poly units were selected having cracked gases containing from 19 to 41% propene-butenes to represent this type of operation. These units are called 1, 2, 3, 4, and 5 for the sake of identification. The cracked gas analyses for the five units are shown in table 1.

Table 1

Cracked Gas Analyses

(Charging Stocks to Midget Poly Units)

Midget Poly Units	1	2	3	4	5
Composition, Mol %					
Hydrogen Sulfide	0.15	1.8	0.33	1.0	0.35
Hydrogen	4.1	0.2	0.3	0.1	....
Methane	25.8	5.0	4.6	3.4	2.2
Ethylene	5.3	2.6	4.0	3.7	2.3
Ethane	16.9	18.9	20.3	16.4	10.7
Propene	15.0	17.1	17.9	23.4	17.8
Propane	23.3	44.1	29.5	27.8	25.1
n-Butenes	2.8	2.8	7.4	9.8	16.4
Isobutene	1.4	3.0	4.1	5.0	6.8
Butanes	4.6	5.9	11.9	10.0	17.9
Propene-Butenes	19.2	22.9	29.4	38.2	41.0
Poly Gasoline (Gals. per 1000 cu. ft. gas)	3.7	4.4	6.1	7.6	9.5

The charge to midget poly plant 1 is a mixture of the pressure still receiver gas and stabilizer gas. The hydrogen sulfide content of these gases varies from 0.15 to 1.8%. When hydrogen sulfide is present in cracked gases under catalytic polymerizing conditions, a reaction takes place with the olefins forming mercaptans such as ethyl, propyl, and butyl.

Where the sulfur content of the polymer gasoline is a factor to be considered, the gas should be freed of hydrogen sulfide before the polymerizing reaction. In connection with these midget units, simplified hydrogen sulfide removal units have been designed, although installations

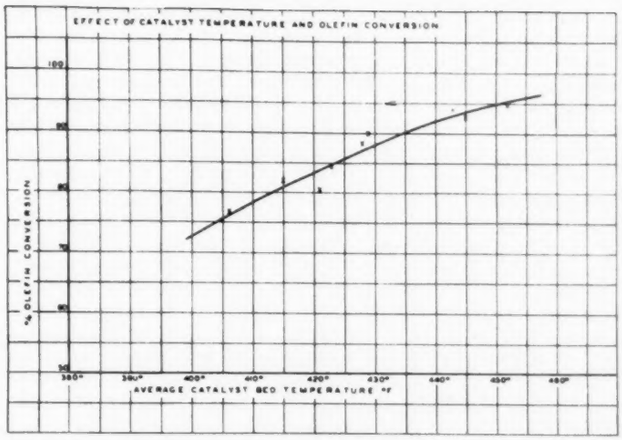

Fig. 2—Effect of catalyst temperature and olefin conversion

have not been made as yet. Their cost is in line with the installation costs of the polymerization units.

The midget poly unit No. 2 processing a high hydrogen sulfide containing gas, produced a gasoline containing 1.5% sulfur. In this case a means of treating was worked out using an absorber and the waste caustic from the refinery treating plant. Where the sulfur content of the polymer gasoline is relatively high, and waste caustic is not available, demercaptizing the polymer gasoline with strong caustic soda solution removing thereby 60% more or less of the sulfur present may be cheaper than hydrogen sulfide removal from the cracked gas. Polymer gasoline containing 0.3 or 0.4% sulfur is used, as such, or blended with the gasoline produced in the refinery to bring it down to market specifications. In some parts of the country 0.4% sulfur polymer gasoline is used and marketed with refinery gasoline containing a similar amount of sulfur.

Spent Gases

The cracked gases after the olefins have been polymerized into gasoline leave the stabilizer of the poly unit with a low olefin content. The cracked gas after being deolefinized is called "spent gas." Analyses of the spent gases leaving the stabilizers of the five midget poly units are shown in table 2, the headings of which correspond to those of table 1 of the initial cracked gas charging stocks.

Table 2

Spent Gases

Midget Poly Units	1	2	3	4	5
Composition, Mol %					
Hydrogen	5.4	0.4	0.2	0.2	0.3
Methane	31.6	10.3	8.5	5.5	5.6
Ethylene	6.1	2.8	4.0	3.7	3.5
Ethane	24.6	34.1	30.2	29.8	25.1
Propene	2.2	3.4	2.1	4.6	0.8
Propane	22.9	46.0	41.9	49.8	50.7
n-Butenes	0.7	0.5	1.1	1.2	0.8
Isobutene	0.3	....	0.2	0.2	0.4
Butanes	6.2	2.5	10.2	5.0	11.6
Propene-Butenes	3.2	3.9	3.4	6.0	2.0

The propene-butenes in the spent gases range from 2 to 6%. The percentage of olefin conversion to polymer gasoline, determined from the analyses in table 2 and those given in table 3, ranges between 85 and 95%. One plant averaged 95% of olefin conversion to polymer gasoline for a five months period.

In order that a clear picture may be presented of the olefin conversion effected by the five poly units, it is necessary to consider not only the olefins in the spent gas, but also the butenes dissolved in the polymer gasoline. In the case of the poly units under study, the average vapor pressure of the gasoline produced is of the order of 25 lbs. (18.8 to 30.9 lbs.). The butanes-butenes present in the gasoline average about 30% of the high vapor pressure polymer. The olefin content of this C_4 fraction must be considered in determining the overall olefin conversion. Table 3 shows the olefin content of the C_4 fraction (normal and isobutane and normal and isobutenes) included in the polymer gasoline.

Table 3

Olefins in the C_4 Gasoline Fraction

Midget Poly Units	1	3	4	5
Composition, Mol %				
Isobutene	1.7	1.5	2.5	1.4
n-Butenes	12.3	8.5	23.9	6.1
n- and Isobutane	86.0	90.0	73.6	92.5

In general, the butene content of the C_4 fraction in the poly gasoline is consistent with the olefins in the outlet gas, although the differences are of wider range.

There are usually three butenes present in cracked gases made up of butene-1, butene-2 and isobutene (2-methylpropene-1) varying in percentages; each having a different velocity of polymerization to gasoline under a given set of operating conditions. The isobutene polymerizes rapidly, butene-2 less so, and butene-1 with some difficulty. It will be noted that the percentage of isobutene is low in every case due to its ease of polymerization compared to normal butenes. Poor conversion is evidenced by high normal butane in the butane-butene fraction.

From the data in Table 3 it is apparent that the results obtained on poly unit No. 4 at the time the samples were taken and analyses made, were inferior to those of the other four commercial units. However, an olefin conversion to about 90% polymer gasoline was possible by modifying the operating conditions.

Temperature affects the rate and degree of polymerization of olefin. A graphic representation of olefin conversion as a function of temperature changes are shown in figure 2.

The analytical data presented in tables 1, 2, 3 permits one to calculate the olefin balances, as a result of poly unit performances.

The percentage polymerization of the individual olefin hydrocarbons present in the cracked gases are shown in table 4.

Table 4

Per Cent Conversion of Individual Olefin Hydrocarbons to Polymer Gasoline

Midget Poly Units	4	5
Olefin, %		
Ethylene	44	35
Propene	89	98
Butene-1 and -2	71	92
Isobutene	97.3	94
Average % Conversion (Propene-Butenes)	85	94.9

In poly units 4 and 5 the percentage of ethylene is 3.7 and 2.3; propene 23.4 and 17.8; n-butenes 9.8 and 16.4 and isobutene 5.0 and 6.8 are present respectively in the cracked gases. Ethylene is relatively difficult to polymerize compared to propene and butenes under the conditions of commercial operation of the poly units. All of the olefins in the cracked gases could be polymerized but the product would boil largely outside the gasoline range. The data show that propene polymerizes readily, in both cases exceeding the average olefin conversion and exhibiting appreciably increased tendency towards polymerizing when compared with normal butene. In the case of unit four, the failure of normal butene to polymerize is chiefly responsible for the relatively low olefin conversion.

Polymer Gasoline

Polymer gasoline yields based upon the cracked gas charging stock to the midget units are dependent upon the percentage of propene and butenes present. The olefin content of the cracked charge to the five units under discussion range between 19% and 41% olefins. The yield of polymer gasoline based upon a 10-lb. Reid vapor pressure ranges between 4.3 to 9.4 gallons per thousand cu. ft. of gas charge to the units. These volumes of polymer gasoline show an olefin conversion ranging between 85% and 95%. The higher conversion yield is for the cracked gas containing 41% olefin. Polymer gasoline and olefin conversion rates are the average of over five months continuous operating periods for the midget units using the same

catalyst. The gallonage of polymer gasoline represented by this period of operation are between 38 and 70 gallons per pound of catalyst.

In the five polymer units under discussion the catalyst at the end of five months had a lower activity than at the beginning of the operation. The order of polymerization activity of the catalyst decreased when using a 41% olefin gas, from 98% conversion to 90% at the end of five months. When processing a 20% olefin gas the catalyst activity decreased from 90% conversion to 85%, giving an average conversion of about 87% for a five-months operating period.

The analyses of the polymer gasoline for the five plants is shown in table 5 and corresponds to the gas analyses given in table 1.

Table 5
Raw Polymer

Midget Poly Units	1	2	3	4	5
Reid Vapor Pressure	20.5	24.1	25	18.8	30.9
A. P. I. Gravity	83.0	73.0	74.0	71.0	77.5
100 cc. Distillation, A. S. T. M.					
I. B. P., °F.	72	69	....	70	55
Per cent Distilled Over					
5	90	106	....	90	80
10	105	123	....	100	96
20	122	152	....	119	138
30	145	191	....	151	197
40	196	206	....	188	226
50	230	218	....	211	241
60	243	237	....	228	302
70	265	267	....	247	364
80	298	310	....	285	....
90	....	....	....	341	450
E. P., °F.	415	370	....	408	450
% Over	89.5	87.5	....	94.5	75.5
% Bottoms	1.5	1.5	....	1.3	1.5
% Loss	9.5	11.0	....	4.2	23.0

The analyses in table 5 show that the vapor pressure of the raw polymer product ranged between 18.8 to 30.9 Reid vapor pressure. It is possible and generally advantageous to operate the poly plant stabilizer not only as a stabilization unit, but also as a means of effecting further butane recovery from the cracking plant gases. It is possible to make available for polymerization all of the butenes which enter the cracking plant stabilizer by deep stabilization. As a result an increased yield of polymer gasoline is produced from the butenes normally contained in the 10-lb. vapor pressure product. The recovery of additional butane from the gas discharged from the cracking plant stabilizer and poly feed is necessary to make up the deficiency in vapor pressure and gasoline volume brought about by polymerizing the butene content of the C_4 fraction contained in the cracked gasoline. The increased yield of polymer gasoline as a resultant of deep stabilization is from 40 to 50% of that obtained when 10-lb. Reid vapor pressure cracked gasoline is produced at the stabilizer. Deep stabilizing involves producing a 5-6 lb. product which generally requires maximum retention of butane in the poly plant stabilizer and gives a polymer of high vapor pressure.

The directly produced gasolines of high vapor pressure by the poly units were stabilized to 10 lbs. Reid vapor pressure, the quality of the products are shown in table 6.

Table 6
Polymer Gasoline of 10 Lbs. Reid Vapor Pressure

Midget Poly Units	1	2	3	4	5
A. P. I. Gravity	65.0	66.2	59.7	66.0	62
Color (light yellow)	Lt. Y.	Lt. Y.	Lt. Y.	Lt. Y.	Lt. Y.
Sulfur, %	0.43	0.08	0.34	1.7	0.26
Mercaptan Sulfur, %	0.19	0.03	0.15	0.80	0.15
Gum (Copper Dish)	40	33	30	45	35
Gum (Air Jet)	10	....	1	11	10
Octane No. (1-3 Method)	82	84.5	83.5	82.5	84
Blending Octane (in 70 octane gasoline blends)	86	....	94.5	88	97.5
100 cc. Distillation A. S. T. M.					
I. B. P., °F.	90	90	87	90	95
Percent Distilled Over					
10	135	130	133	126	132
20	172	165	175	157	165
30	196	191	209	186	190
40	209	206	234	206	208
50	221	218	251	220	226
60	241	237	281	233	241
70	264	267	306	254	265
80	299	310	333	286	302
90	415	370	402	416	450
E. P., °F.					
% Over	98.5	87.5	....	94.5	75.5

Inspection of the data for the polymer gasoline shows appreciable differences in the endpoint of the polymer. To a lesser extent similar differences exist in the ASTM gum content of the various poly gasolines. In the past we have considered that the endpoint of the polymer gasoline was essentially a function of the activity of the catalyst. With a fresh catalyst high endpoints would inevitably result, but would decrease with loss in catalyst activity. The endpoint of the polymer was then considered to be essentially a function of olefin conversion. The operation of these units has shown that a considerable amount of control can be exercised over the endpoint and gum content of the polymer gasoline and at substantially constant olefin conversions it is possible to vary the endpoint over a wide range. Fortunately, the operating conditions which are conducive to the formation of polymer gasolines of low endpoints, low ASTM gum, and to a lesser extent good color, are likewise conducive to the maintenance of maximum catalyst life and activity.

The sweetening operation by either the U.O.P. copper method or sodium plumbite may be carried out on the polymer product as produced prior to blending or refinery gasolines may be blended and then sweetened. In general, the choice of methods used in sweetening the poly product or a blend with refinery gasoline is influenced by the mercaptan content of the polymer gasoline. Where the sulfur content of the polymer is high, in general it is well to sweeten the polymer separately.

In general, the blending value of polymer gasolines increases with decreasing sulfur content which lends advantage to the operation of desulfurizing the gas before charging to the poly plant.

In a polymer gasoline containing a total sulfur content of 1.99% the mercaptan sulfur was 1.10% of the polymer. The distribution of the mercaptans—

	%
Methyl mercaptan	0.048
Ethyl mercaptan	0.321
Propyl mercaptan	0.521
Butyl mercaptan	0.178
Amyl mercaptan	0.010
C_6 and heavier mercaptan	0.020

After caustic soda treatment the mercaptan sulfur was reduced from 1.10 to 0.082% and the total sulfur from 1.99 to 1.06%.

Operating Results

Of the five midget units discussed here, one operates in conjunction with a reforming unit, another with a combination topping and cracking unit, and the other three with plants cracking topped crudes.

In the case of the reforming unit, the yield of 70 octane number gasoline without the polymer was 76%. With the poly unit processing the cracked gas produced in the reforming operation the yield of gasoline increased by 8% making the total gasoline from reforming and polymerization 84%. Coincident with the increase in gasoline yield there results an increase in octane number of the blend of polymer and reformed gasoline of 1.5 to 2 octane numbers.

When operating the combination topping and cracking unit, the midget poly plant increased the yield of gasoline by 1.9% calculated on the crude charge. Together with this increase in gasoline yield an over-all increase in octane of one number results.

In the case of one of the poly units operating on gas from topped crude oil cracking, the stabilizer produces a debutanized gasoline, thus increasing to a maximum the olefin-containing gas to the poly plant. In this type of operation, the polymer gasoline serves to increase the overall gasoline yield from the combined operation by 3.1% based on the cracking stock. The octane number of the blend of the gasoline increased from 69.2 to 71.

The other two poly units are processing a lesser amount of stabilizer gas and the increase in gasoline yield varies from 1 to 2.5% with an octane rise of from 0.5 to 1 number.

Road and laboratory tests, conducted with blends of polymer gasoline and various types of base fuels, have dis-

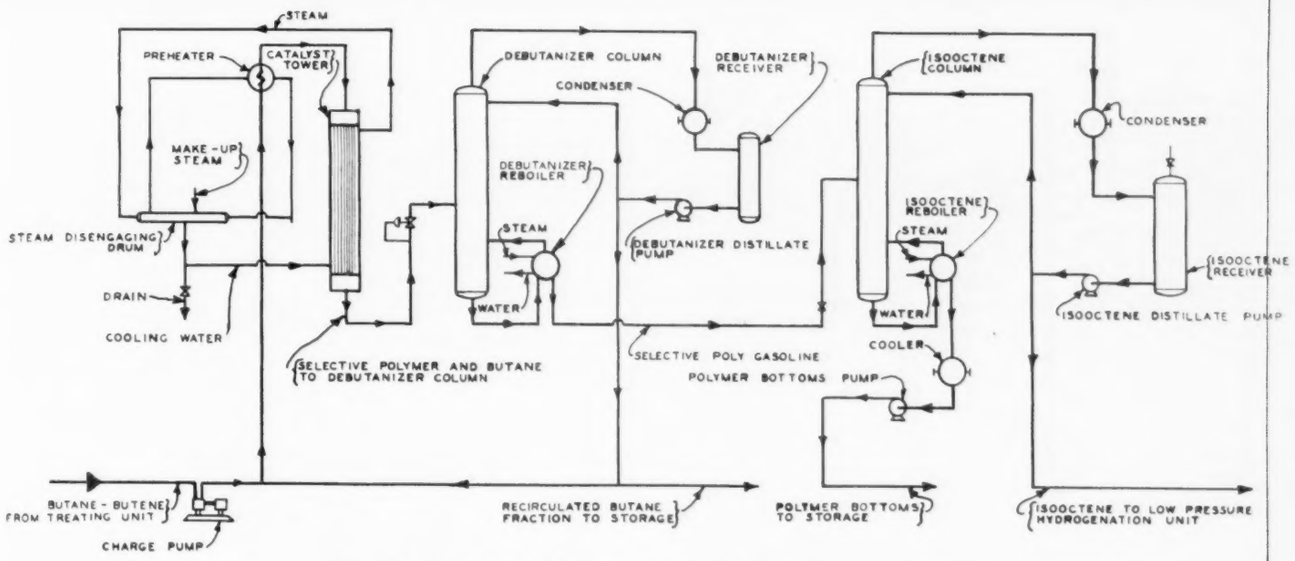

Fig. 3—Flowchart of U.O.P. catalytic selective polymerization unit

closed that such blends have a higher antiknock value on the road than is indicated by laboratory tests. As an illustration, a typical leaded gasoline of 69.5 octane motor method was increased to 71.5 by the addition of 10% polymer gasoline. This blended gasoline, however, showed a road rating of 75 octane.

Midget Poly Iso-octane Units

The design of iso-octane plants is such that it lends itself well to small units. Several midget iso-octane units to produce 50 barrels a day of iso-octane have been designed and will be constructed for commercial operation. The charge to the midget polymerization unit will be a butane-butene fraction from the cracking still stabilizer.

A typical analysis of the butane-butene fraction would show about one % propane and propene, 18% isobutene, 33% normal butene, and 48% butanes. The butane-butene charge to the selective polymerization unit analyzed as shown in table 7.

Table 7
Charging Stock to Selective Poly Unit

	%
Propane-Propene	1.0
Isobutene	18.4
Normal Butene	32.6
Butanes	48.0

This stock is water and caustic soda treated before passing to heat exchangers, to remove the nitrogen and sulfur compounds present. The temperature of selective polymerization ranges from 260 to 3250° F. and the pressure maintained at about 700 pounds. A flow chart of the butane-butene polymerization unit to produce iso-octenes is shown in Fig. 3. The temperature at which the selective polymerization takes place is an important factor which governs the octane rating, and yield of the hydrogenated polymer gasoline (iso-octanes). The crude polymer gasoline made up of iso-octenes, dodecenes and cetenes analyzed as shown in table 8.

Table 8
Crude Selective Polymer

A. P. I. Gravity	59.9
100 cc. Distillation A. S. T. M.	
I. B. P.	218
% Distilled Over	
10	225
20	226
30	228
40	229
50	231
60	233
70	236
80	242
90	261
E. P.	381
Octane No.	84.0
Reid Vapor Pressure	1.3
Sulfur, % by Weight (Lamp)	0.005

The crude polymer is distilled into an iso-octane fraction and bottoms. The distillation and other properties of this fraction are shown in table 9.

Table 9
Iso-octenes

A. P. I. Gravity	61.5
100 cc. Distillation A. S. T. M.	
I. B. P.	200
% Distilled Over	
10	221
20	223
30	225
40	226
50	227
60	227
70	228
80	230
90	233
E. P.	267
Octane No. (Before hydrogenation)	85.5
Reid Vapor Pressure	2.0
Sulfur, % by Weight (Lamp)	0.002
Color	30+

The polymer bottoms are made up largely of iso-dodecenes fraction with a small proportion of isoceteries. The distillation analysis is shown in Table 10.

Table 10
Selective Polymer Bottoms

A. P. I. Gravity	47.3
100 cc. Distillation A. S. T. M.	
I. B. P.	319
% Distilled Over	
10	338
20	345
30	351
40	357
50	361
60	364
70	367
80	374
90	392
E. P.	467
Sulfur, % by Weight	0.02
Color	Yellow

The conversion of isobutene is practically complete in the operating range of this process. The percentage conversion of normal butene increases, therefore the polymerization ratio of normal to isobutene will also increase. The yield of crude polymer increases under the same conditions while its higher boiling components increase slightly in amount. The finished hydrogenated iso-octanes from the iso-octanes produced at different temperature (260° to 350° F.) may range in octane rating from 91 to 97 dependent on temperature. The olefin conversion to polymer based on the isobutene present in the gas will vary from 150 to 280%

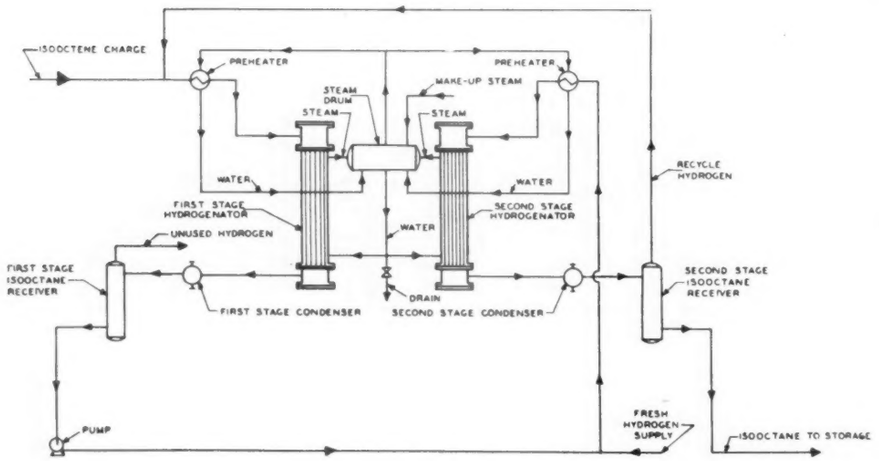

Fig. 4—Flowchart of U.O.P. hydrogenation unit

on mole basis. The higher the octane rating of the hydrogenated polymer (iso-octanes) the lower the yield based upon the butane-butene charge. The percentage conversion of the olefins in the butane-butene fraction to iso-octenes is dependent upon the octane rating desired after their hydrogenation. The yield will vary between 24 and 31% by volume of the charging stock given in table 7. These polymer gasoline yields correspond to a 30-40% yield by weight of the butane-butene fraction charged to the selective polymerization unit.

The iso-octenes produced may be convtered into iso-octanes by the U. O. P. low-pressure hydrogenation process at pressures of about 75 pounds and temperatures of 325° F. in the presence of a nickel catalyst. The hydrogenation reaction is also exothermic hence the unit is similar in design to the selective polymerization unit in the step of close temperature control by means of a water jacket around the reactor. A flow chart of the low pressure hydrogenation unit is shown in figure 4.

The properties of the hydrogenated iso-octanes are shown in table 11.

Table 11

Iso-octanes

A. P. I. Gravity	66.4
100 cc. Distillation A. S. T. M.	
I. B. P., °F	210
Per cent Distilled Over	
10	222
50	227
90	232
E. P.	254
Octane No. (A. S. T. M. Motor Method)	95.0
Reid Vapor Pressure (lbs.)	1.6
Sulfur, %	0.001
Olefins, %	0.5
Gum (Copper Dish)	0
Color	30

The iso-octanes as produced are not aviation gasoline as such. They must be blended with aviation stock such as special straight-run or natural gasoline and isopentane for volatility.

The usual procedure for preparing 100 octane aircraft fuel is to blend commercial iso-octane with aviation straight-run gasoline and isopentane, and add 3 cc. of tetraethyl lead per gallon. The isopentane is used to supply the front-end volatility which iso-octane lacks. The amount of isopentane incorporated in the finished blend is usually 10-15%, depending on its availability and also on the vapor pressures of the iso-octane and the straight-run base fuel.

Considerable discussion has centered around safety fuels for use in aircraft engines to reduce the fire hazard now present in conventional volatile-type fuels. Although the exact properties of an ideal safety fuel are not definitely known, such a fuel is generally considered to boil in the 300-400° F. range and have a flash point above about 110° F.

The U.O.P. selective polymerization process used in the manufacture of iso-octane aircraft fuels, also produces material which can be fractionated to a product boiling in the safety-fuel range. The selective poly units are operated to produce maximum yields of iso-octenes. The yield of iso-octenes on the polymer product can be controlled to 90-95%, the balance being dodecenes and hexadecenes or cetenes. However, the reaction may also produce high yields of the heavier polymers which can be hydrogenated to safety aviation fuel. The properties of this type fuel are given in table 12. For comparative purposes we have included data for iso-octane produced in the same operation.

Table 12

	—Operation 1*—		—Operation 2*—	
	Iso-octane Fraction	High Boiling Material	Iso-octane Fraction	High Boiling Material
Gravity, °A. P. I.	66.4	50.5	68.5	58.1
100 cc. Distillation A. S. T. M.				
I. B. P., °F.	210	273	199	250
Per cent Distilled Over				
10	222	317	218	281
50	227	362	222	340
90	232	389	230	361
E. P., °F.	254	450	250	390
Reid Vapor Pressure	1.6	<0.5	1.7	<0.5
Octane No., M. M.	95	89	97	96

*Charging Stock:
Operation 1—one part isobutene to 1.2 parts *n*-butene.
Operation 2—four parts isobuene to one part *n*-butene.

A safety aviation fuel can be obtained from the hydrogenated high boiling fraction by distillation which would yield a product of 98-99 octane rating if desired.

As of today (May 1st, 1939) midget iso-octane units in the United States are uneconomic. These units were developed primarily for foreign countries where special local conditions warrant their installation. Notwithstanding this situation, these midget iso-octane units represent an appreciable potential supply of iso-octane and safety aviation fuel in the U. S.

Installs Perco Unit

The Glacier Production Co., now constructing a refinery at Cut Bank, Mont., has signed a license agreement with Perco, Inc. for a 2000 barrel per day Perco copper sweetening unit of the liquid process design. The unit is expected to be in operation by June 1. The refinery will process Cut Bank crude.

L. M. Baltzell of Oil City, Pa., Wolverine-Empire Refining Co., has been appointed a member of the Technical Advisory Committee of the Pennsylvania Grade Crude Oil Assn.

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GASOLINE ANTIOXIDANTS

An Interview . . .

With A Coffee Taster Who Did No Homework

THE Scottish poet Robert Burns was a whiskey taster by profession. The writing of verse was only his avocation.

Victor Ivan Downey, who was made superintendent of refining for National Refining Co. May 1, is no poet but his vocation at one time was partly that of taster. Vic was a coffee taster—that being part of the job of chief chemist of a coffee company.

It is said that Bobby Burns was so thoroughly wrapped up in his work that he did a good deal of overtime tasting. He did homework as well as that for which he was paid at the distillery.

Downey was different, although the stimulant he tasted was far less potent than the beverage of Burns. Vic never drank coffee until years after he abandoned coffee tasting for the profession of gasoline testing. It was only when his doctor told him that coffee would be good for him that Downey sampled his own wares.

Downey was a Kansas farmer boy who wanted to be a chemist so he went to Ottawa University not far from home. The war came on while he was a senior and Vic could not wait to get his diploma. Aviation had caught his fancy and he wanted to get in before it was too late. The war might be over if he waited until after graduation.

So the spring of 1937 found him down in Texas making maps. He didn't stay there long, however, because the army needed chemists and Downey's service record revealed his special training in that direction. He was transferred to the Ordnance department and stationed at the du Pont powder factory at Carney's Point, N. J. After a period of schooling he was given the job of inspecting explosives manufactured by du Pont for the Ordnance department.

When the war was over Downey was acting chief chemist of the Hercules Powder Co. plant at Nitro, W. Va.

Out of the army Downey finished his formal education quickly and got a job as tester at the Cosden & Co. laboratories in West Tulsa. He worked under H. T. Bennett who now is chief chemist for the Mid-Continent Petroleum Corp., Cosden & Co. successor.

Before long Downey was testing ethers in the Squibb laboratories at New Brunswick, N. J. Squibb was doing test work for Kaffee Hag of Cleveland, a coffee company which was taking the authority out of coffee so that poor sleepers would not be robbed of their rest after a snack and hot cup of coffee at midnight.

Within a few months Downey was in charge of Kaffee Hag laboratories at Cleveland. With mouth open he was smelling samples of coffee. (To get the full fragrance of coffee always inhale with your mouth open, he advises.) A coffee taster makes 50 cups of coffee at once. These are set on a revolving table and the fragrance of each cup is inhaled. The unpleasant smelling samples go out first.

Then comes the tasting. Downey used to take a few drops and roll the sample around on his tongue. But he never swallowed the sample.

Vic says he never would have gotten any sleep if he had followed the lead of Robert Burns. Because coffee keeps him awake and the tests he made were on new shipments of beans before the caffein was removed. It was on these tests that coffee was bought. One cannot set up a laboratory test for coffee taste, and cannot depend on its source to guarantee fragrance and palatability. Every shipload is different.

In removing caffein from coffee the first step is to steam the green beans selected by the coffee taster. This opens up the pores. Then the beans are flooded with a solvent. Benzol was once used. Now the solvent is trichlorethylene. The beans then are dried to remove traces of solvent and roasted.

The process removes 99.5 per cent of the caffein—and most of the wax which gives coffee its bitter taste. Since the dripolator has come in, the manufacturers have had to put part of the wax back in the coffee. Otherwise the grounds packed down too tightly to allow the water to pass through.

Right after the war the coffee company was selling caffein at $35 per pound. Actually caffein was paying the cost of operations and coffee was the by-product. Money obtained by the sale of coffee was profit.

By 1921 Downey was back in the oil business again—this time to stay. He went to Findlay as head of National Refining Co's. laboratories there for 10 years. While there he fathered four husky boys who lead him a merry chase. They range in age from 10 to 16 years. In 1931 he moved to National's headquarters at Cleveland as chief chemist and technical advisor to the management.

You might say that Downey was a handy man around the house during the next few years. At one time during N.R.A. he acted as labor negotiator for National.

Part of this handy man job included working with the sales department. Then the first thing he knew Downey was putting in full time as a lubricating oil sales engineer.

Beginning May 1 Downey is back in the manufacturing end of the company as superintendent of refineries. Under his direction a plant modernization program has been begun with the letting of contracts for a new U.O.P. heavy oil furnace at the Coffeyville plant.

The initial building program will involve changing the Coffeyville cracking plant over to a two-furnace unit which will increase capacity of the Dubbs unit about 25 per cent from 75,000 to 100,000 barrels per month. Arthur G. McKee & Co. has the contract for the furnace. Other work at the plant will be done by National's own men under Downey's general direction.

Along with the appointment of Downey as superintendent of refineries comes the appointment of J. B. Gillam as superintendent of the Coffeyville, Kan., refinery. He has been assistant there to H. B. Setzler who was superintendent for many years. Mr. Setzler has been seriously ill for some months and now is retiring permanently.

Downey's photograph appears on the front cover of this issue. The picture looks like "Vic" except that it doesn't reveal the redness of his hair or his freckles.

When they announced his appointment as superintendent one of his associates said: "They couldn't have picked a finer person for the job. He's a swell guy to work for."

Activities . . .

OF EQUIPMENT MANUFACTURERS

GAS INDICATORS—A new model of portable electric-type combustible gas indicator is announced by Johnson-Williams, Ltd., Palo Alto, Cal. The new model "F" is said to be equal to the heavier, larger, and more expensive model "C". Weight and size have been reduced one-half, mainly by replacement of large batteries with small long-life batteries.

* * *

ALLOY TUBES — The Babcock & Wilcox Tube Co., Beaver Falls, Pa., has issued Technical Bulletin No. 12, Condensed Technical Data on High-Temperature Steels, containing information on seamless alloy tubes and pipe for high pressure and high temperature service.

* * *

T. N. ST. HILL, president of Petroleum Rectifying Co., left Los Angeles recently for an eastern trip. On his return he will spend some time at the Houston branch office.

* * *

pH RECORDERS. A new line of pH recorders and controllers is announced by The Bristol Co., Waterbury, Conn. These instruments employ the glass electrode method of measurement. Shielded glass and calomel electrodes are used for measurement and control.

Two types of electrode assemblies are offered: the enclosed flow type (solution under measurement is pumped or allowed to flow through the chamber) and the immersion type (designed for immersion in tanks and vats). The company's bulletin 536 gives more information.

* * *

VISCOSIMETER. A new Saybolt viscosimeter with automatic constant temperature control said to be accurate to 0.03 degree Fahr. is described in Bulletin 701 of Precision Scientific Co., 1736 N. Springfield ave., Chicago. The new instrument is intended particularly for determining oil viscosities by A.S.T.M. Method D 88. The leaflet names 30 features promoting accuracy and ease of handling.

* * *

STEAM TURBINE SELECTION — Information on the application and selection of steam turbines is contained in a new 48-page booklet (B. 2198) just issued by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The booklet covers seven types of turbines in sizes up to 10,000 kw. Requests for copies should be directed to department 7-N-20.

* * *

GENE McINTYRE, Los Angeles, has been appointed representative of Naylor Pipe Co., Chicago, in California and Arizona. Lockseam Spiralweld pipe is the company's specialty.

* * *

WILLIAM C. STEVENS, 55, vice president in charge of engineering of Cutler-Hammer, Inc., Milwaukee, died May 15. He had been with the company since his graduation from Cornell in 1906.

* * *

GAS PURIFICATION PLANT — A gas purification plant of 15,000,000 cubic feet daily capacity will be erected by The Girdler Corp., Louisville, in Kanawha County, W. Va., for the United Fuel Gas Co., Charleston, W. Va. The plant is expected to start operating early this summer removing hydrogen sulfide from sour natural gas for domestic and industrial use.

* * *

GORDON F. HESS, formerly assistant manager of sales of the Alloy Steel Division of Republic Steel Corp. in Massillon, Ohio, has been appointed district sales manager of the Houston District, effective June 1.

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Dopes Promise Improvement In Diesel Fuel Quality‡

(*Continued from page* R-230)

Observations of the effect of acetone peroxide brought out that the decrease of ignition delay is greater in a low cetane fuel than in a high cetane fuel. However, the effect of a dope when expressed in the increase in the cetane number is greater in a high cetane fuel than in a low cetane fuel.

Comparing two fuels of equal cetane number, one undoped and the other with a dope, further addition of equal amounts of dopes to both fuels has a greater effect on the undoped than on the doped fuel. The effect of a dope, expressed either as an increase in the cetane number or in a decrease of the ignition delay, decreased with continued addition of dope.

As the working of a dope is purely chemical, its effect will be greater, the greater the "chemical" part of the ignition delay is. It can do nothing to shorten the "physical delay," which is due to the absence of sufficient vapors in the first instant of delay. In heavy fuels the physical delay is relatively more important and the effect of dope will then be lessened. These conclusions were verified by engine tests. In high speed engines, especially those with a hot turbulence chamber, the dope has less effect than in a low speed (cold) engine.

After the ignition delay stage of the combustion process are the combustion of the injected fuel, the ignition and combustion of fuel injected later, and the after burning. Combustion once initiated is found to be governed practically only by the state of mixing of air and the injected fuel and by the way of mixing of air and the further injected fuel. Therefore, it has not yet been possible to detect clearly an influence of chemical composition of the fuel on the combustion process, apart from the influence determined by ignition quality and the amount of heat liberated during combustion as determined by the carbon-hydrogen ratio.

Fuel consumption and exhaust temperatures increase with increasing dope percentage or cetane number, which is in accordance with what is generally observed in direct injection engines. Comparison of an undoped fuel of 58 cetane number and of practically the same viscosity and distillation range shows that specific fuel consumption is now somewhat smaller than for the corresponding doped fuel. This may be ascribed to the difference in calorific value between the fuels, however. The maximum pressure on the undoped fuel is somewhat lower but this may be explained by a difference in specific gravity, so that with the same pump and fuel valve characteristics, more fuel is injected per unit of time for the heavier fuel and when burning, more heat is liberated per unit of time even when the difference in calorific value is taken into account. On the other hand, the spread in the test data for the maximum pressures warned against over estimating the importance of this deviation.

Apart from the effect on the ignition quality, none of the other fuel properties are unfavorably affected by a good ignition dope. Hence one can hardly expect any other effect on wear and incrustation than will be determined by the increase of the ignition quality. Storage during several years of 100% pure ethyl nitrate has not had a measurable influence on its effectiveness as a dope. With acetone peroxide the experience of the authors has covered storage tests of 10 months. These tests have proven the practical stability during storage of a fuel doped with acetone peroxide.

Acetone peroxide in pure white crystals is explosive. When in solution, however, this explosive character is reduced practically to zero. At room temperature acetone peroxide is soluble in gas oil up to 5% or 6%. Flashpoints of the fuels have not been effected greatly when any trace of acetone is removed by washing the doped fuel with water. Ethyl nitrate causes an appreciable decrease of flashpoint, in some instances below the value tolerated in many specifications.

Appointment of Lester G. Metcalf as manager of marine operations, succeeding William Groundwater, who recently resigned to enter into private business, is announced by W. L. Stewart, Jr., vice president of Union Oil Co. of California. Formerly manager of manufacturing, Metcalf has been associated with Union Oil for the past 25 years. He is a graduate of Pomona College and Massachusetts Institute of Technology

RUSSELL BUCKHAM, chief chemist, James B. Berry Sons Co., Oil City, will teach oil and gas vocational courses in Oil City High School next year. He has been instructor in extension classes conducted by Pennsylvania State College for the past two years.

New Patents

Compiled by R. E. Burnham, patent and trade-mark attorney, 511 Eleventh Street, NW, Washington, D. C., from whom copies may be obtained at rate of 25c each. State number of patent and name of inventor when ordering.

May 9, 1939

REFINING

Process of removing ash-forming constituents from residual petroleum oil—F. M. Archibald, Elizabeth, N. J., assignor to Standard Oil Development Co. Filed Nov. 28, 1936. No. 2,157,315.

Absorption of gases—G. L. Mateer, Roselle, and W. H. Rupp, Elizabeth, N. J., assignors to Standard Oil Development Co. Filed Sept. 18, 1936. No. 2,157,343.

Hydrocarbon oil extraction—S. W. Ferris, Aldan, Pa., assignor to Atlantic Refining Co. Filed July 3, 1933. No. 2,157,821.

Purification and separation of gaseous mixtures—E. W. Zublin, San Francisco, assignor to Shell Development Co. Filed Aug. 14, 1937. No. 2,157,879.

The following to Universal Oil Products Co. as assignee of the inventors:

Dehydrogenation of hydrocarbons—A. V. Grosse, Chicago. Filed Sept. 30, 1937. No. 2,157,202.

Dehydrogenation of hydrocarbons—Grosse and J. M. Mavity, Chicago. Filed Sept. 30, 1937. No. 2,157,203.

Conversion of hydrocarbons—Grosse and J. C. Morrell, Chicago. Filed Sept. 30, 1937. No. 2,157,204.

Polymerization and catalyst—V. Ipatieff and R. E. Schaad, Chicago. Filed Sept. 30, 1937. No. 2,157,208

Dehydrogenation of hydrocarbons—Morrell. Filed Sept. 30, 1937. No. 2,157,939.

Conversion of hydrocarbons—Morrell and Grosse. Filed Sept. 30, 1937. No. 2,157,940.

Conversion of hydrocarbons—Morrell and Grosse. Filed Sept. 30, 1937. No. 2,157,941.

The following to Pure Oil Co. as assignee of the inventors:

Method of converting hydrocarbons—H. C. Schutt, Mount Vernon, N. Y. Filed Mar. 26, 1934. No. 2,157,220.

Method of sweetening hydrocarbons oils—E. D. Sutton, Newark, Ohio. Filed June 17, 1935. No. 2,157,223.

Methods of producing motor fuels—C. R. Wagner, Chicago. Filed Apr. 21, 1933. Nos. 2,157,224 and 2,157,225.

Lubricating oils—B. H. Lincoln and A. Henriksen, Ponca City, Okla., assignors to Lubri-Zol Development Corp. Filed June 4, 1932. No. 2,157,134.

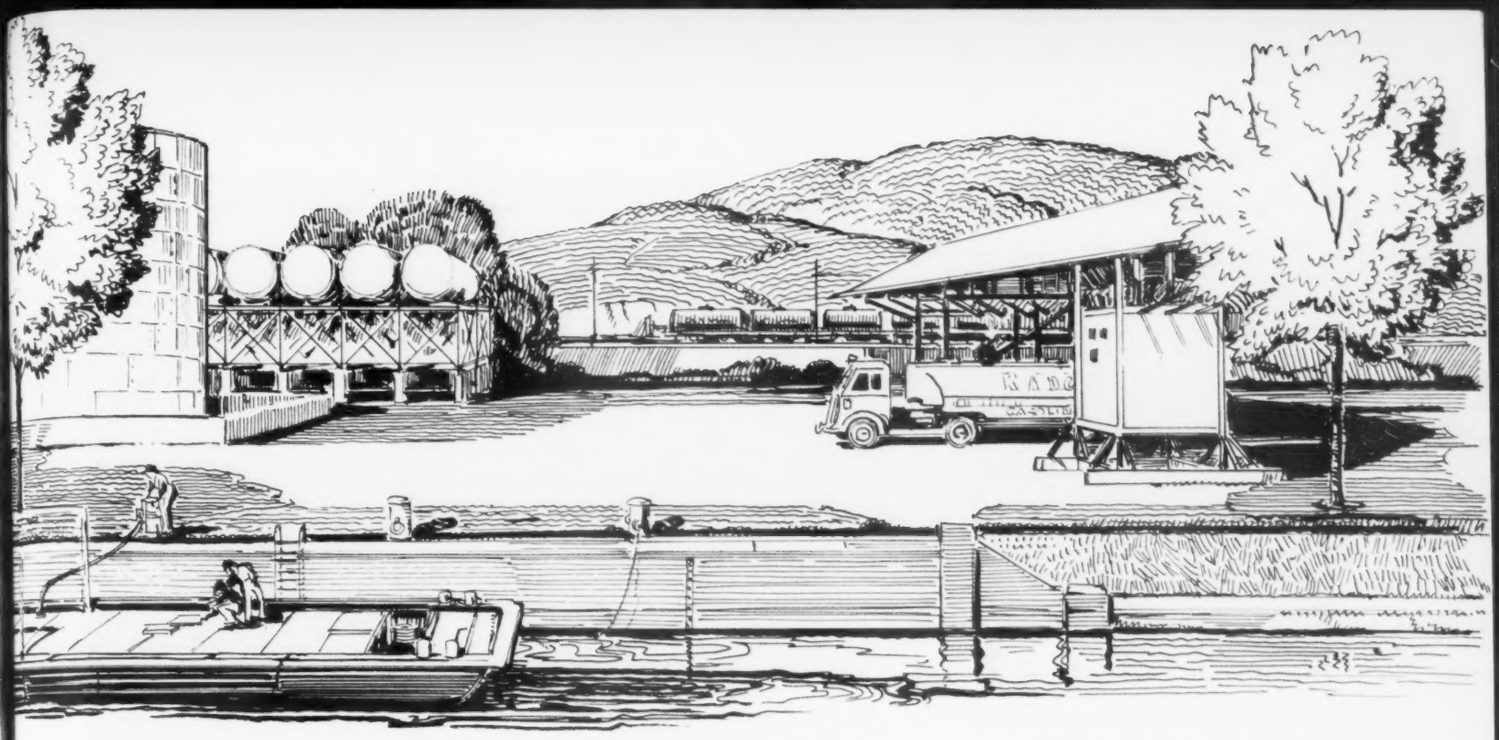
Suspensions for lubricating and other purposes—V. R. Abrams, East Orange, N. J., assignor to Sulfo Corp. Filed June 10, 1936. No. 2,157,379.

Extreme pressure lubricating compositions—R. L. Humphreys, Berkeley, Calif., assignor to Standard Oil Co. (Calif.) Filed Mar. 31, 1934. No. 2,157,452.

Lubricating oil compositions, inhibitors therefor, and methods of manufacturing same—T. L. Cantrell and J. G. Peters, Lansdowne, Pa., assignors to Gulf Oil Corp. Filed Sept. 17, 1936. No. 2,157,479.

Apparatus and method of recovering gasoline and like (from volatile vapors from storage tanks)—G. G. Urquhart, Cynwyd, Pa. Filed July 21, 1936. No. 2,157,579.

Process for extreme pressure lubricants—A. J. van Peski and F. R. Moser, Amsterdam, Netherlands, assignors to Shell Development Co. Filed Nov. 14, 1936. No. 2,157,873.



To the Bulk Plant Operator . . .

LEAST glamorous of all activities in the oil industry, least known to the public, is the bulk plant which furnishes the important link between refinery and retail outlet.

Thirty million motorists drive into service stations each week, but few of them have ever been inside a bulk plant. They often may notice a tank truck on the road and, maybe, the more observant may decide that it has some connection with a group of tanks a few miles back. But that is about all.

How many motorists appreciate that the low cost of gasoline they buy at the neighborhood station or at the pump in front of the backwoods store is due in part to efficiently operated bulk plants and tank trucks?

The bulk plant operator lacks the incentive of contacts with the public. Good management becomes largely a matter of self-discipline, functioning unseen and unappreciated. Yet it doesn't go unrewarded. Efficiency pays big dividends in the operation of bulk plants.

Pick out the successful oil marketer and it's an odds-on bet that he knows how to manage his bulk plants so that each gallon is distributed at a profit. He also realizes that he must do it himself because there is no one else to keep him on his toes (like the consuming public and competing stations do in the retail field).

The successful oil marketer knows that there are hundreds of loopholes around a bulk plant where profits can leak through. And he keeps those holes plugged.

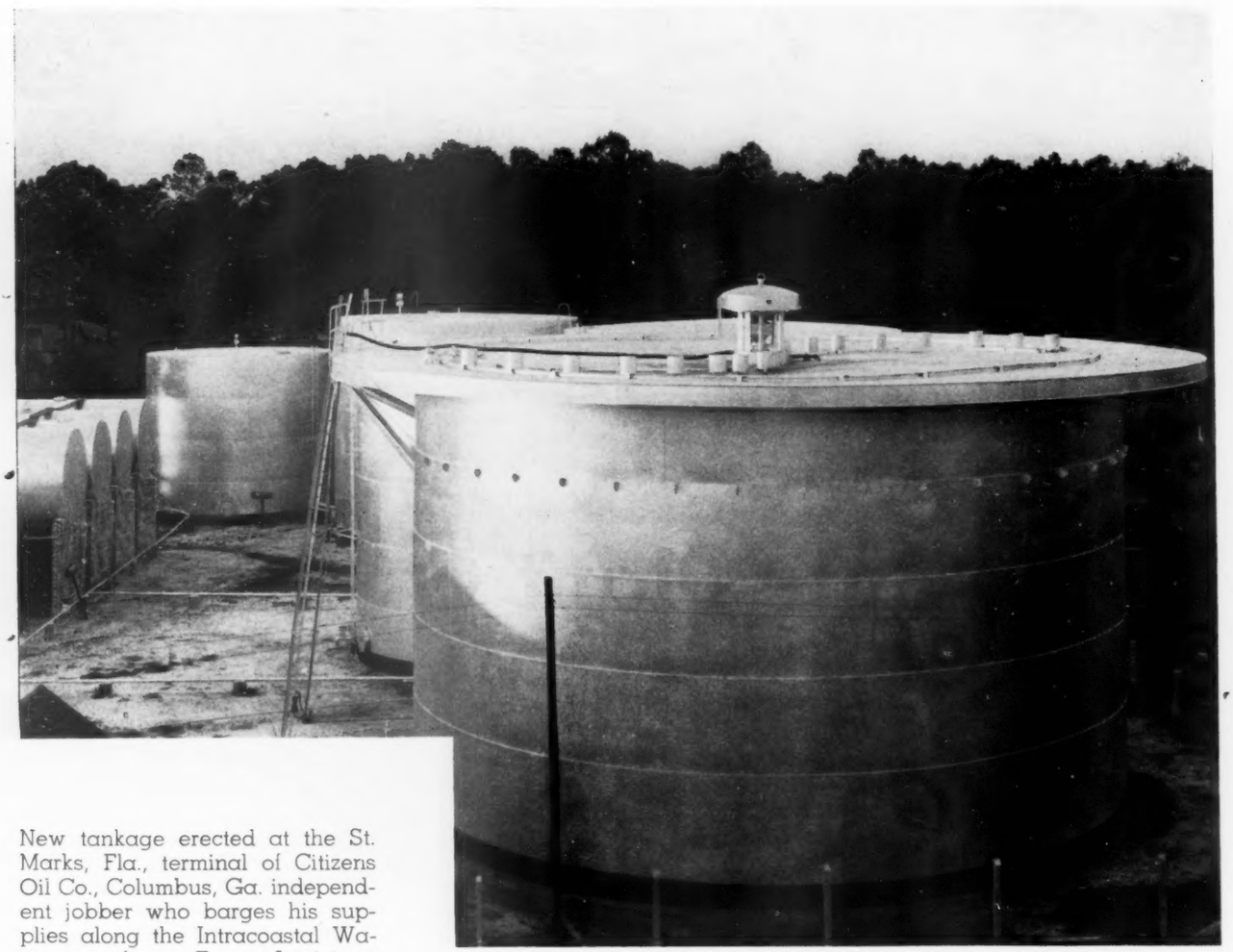
Realizing that a gallon lost may eat up the profit on several other gallons sold, he guards against evaporation losses, leaks, spillage, and inaccurately-measured deliveries.

He knows—and takes precautions against—the dozens of possible danger points around the plant, both as to fire hazard and personal injuries.

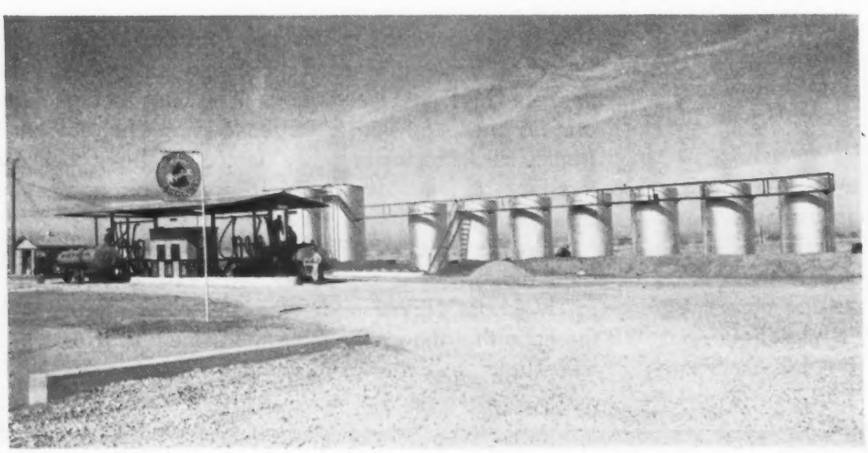
He gets no credit from the public for his good housekeeping (except for the attractive appearance of his trucks and uniformed drivers), yet he knows that orderliness promotes efficiency. He realizes that a poorly-equipped plant can still load a tank truck but the end of the year may show profits have mysteriously slipped through the operator's fingers.

So, he carefully plans the location of his equipment, maintains it in good order and manages his personnel to eliminate lost motion. If he finds that efficiency can be improved with a larger loading line, new rack, pump, truck, meter or other device, he buys it, knowing that a good investment is precaution against future expense.

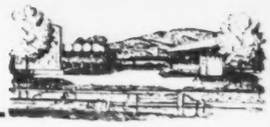
To the successful bulk plant operator, unappreciated though he is by the general public, NATIONAL PETROLEUM NEWS dedicates the following pages in the hope that therein he may find some new idea which will stimulate him to even greater efficiency.

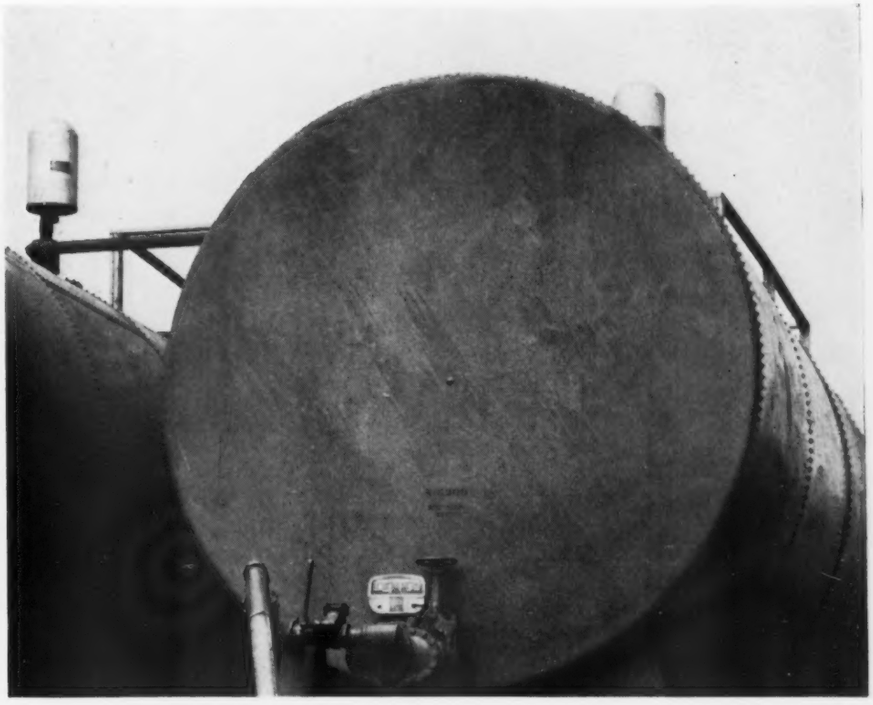


New tankage erected at the St. Marks, Fla., terminal of Citizens Oil Co., Columbus, Ga. independent jobber who barges his supplies along the Intracoastal Waterway from Texas - Louisiana Gulf Coast. In the foreground is a 12,500-barrel tank equipped with a balloon roof. Immediately behind it is a 5000-barrel tank which has its vapor space interconnected with the vapor space of the larger tank, thus using the one balloon for both tanks to prevent evaporation losses

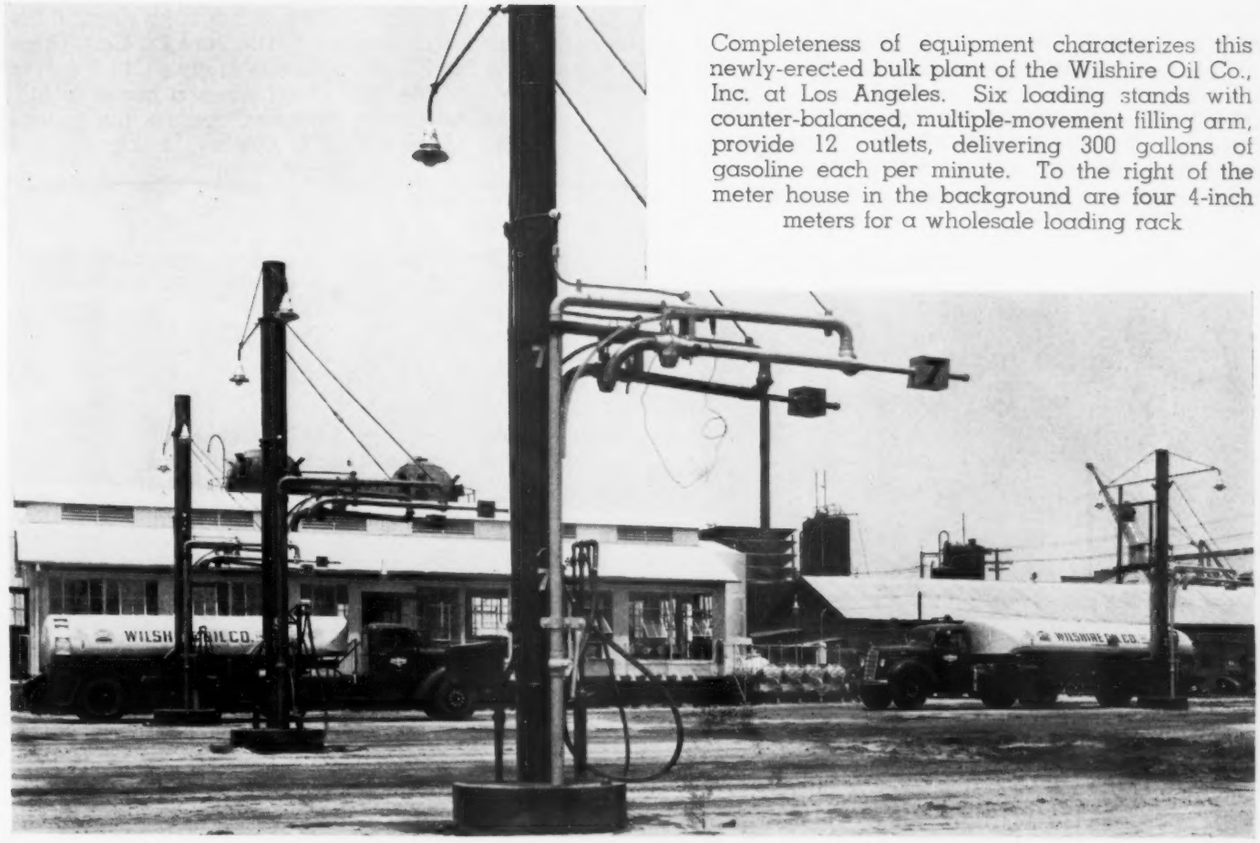


Four different grades of gasoline, as well as kerosine and distillate, are received at this new pipeline terminal of Bell Oil & Gas Co., near Burkburnett, Tex., over the company's new 4-inch, 10-mile line from its refinery at Grandfield, Okla. A control house near the terminal prevents mixing and switches the products to the proper receiving tank. Storage capacity is 125,000 gallons. Four trucks can be loaded at one time, six minutes being required per truck

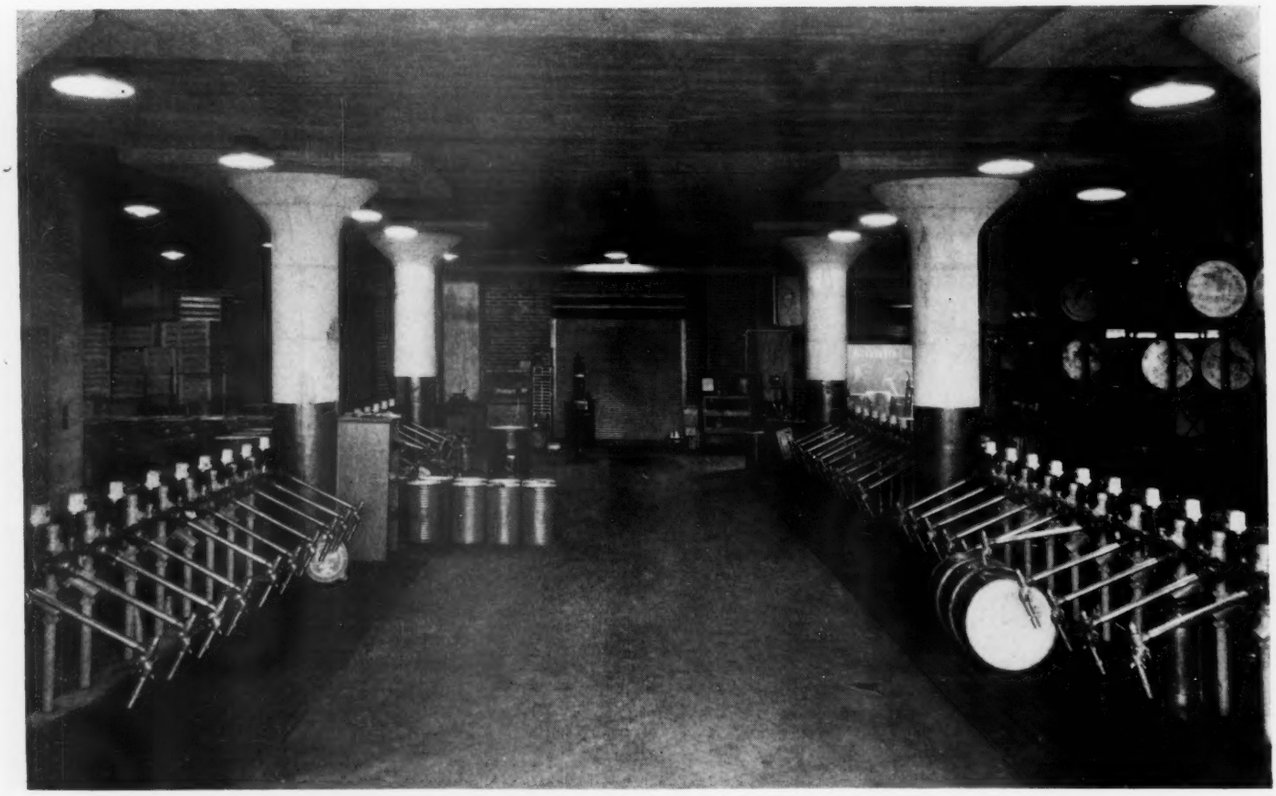




Operating economy for the average oil marketer starts at the bulk plant. Use of storage tank vent seals is a factor in these savings, not only reducing evaporation losses but promoting safety by allowing gradual release of vapors. This installation is at a Deep Rock Oil Co. bulk plant in the Chicago district

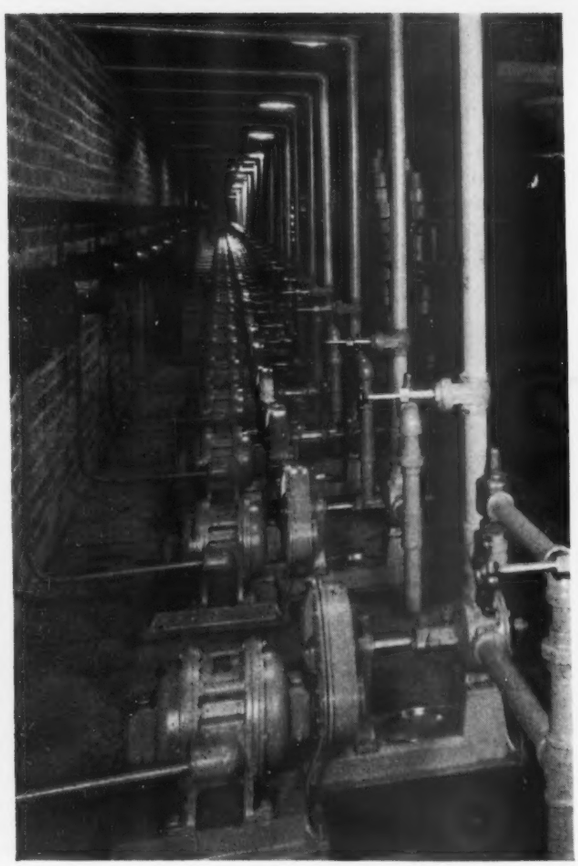


Completeness of equipment characterizes this newly-erected bulk plant of the Wilshire Oil Co., Inc. at Los Angeles. Six loading stands with counter-balanced, multiple-movement filling arm, provide 12 outlets, delivering 300 gallons of gasoline each per minute. To the right of the meter house in the background are four 4-inch meters for a wholesale loading rack

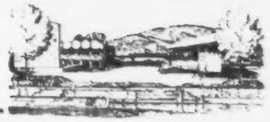


This is the lubricating oil barreling room at the Cincinnati terminal of The Pure Oil Co. There are 39 fill lines, with automatic shut-off valves to stop the flow of oil when a barrel is full. Remote control switches operate the pumps and while the oil is flowing, a warning red light is on

• • •



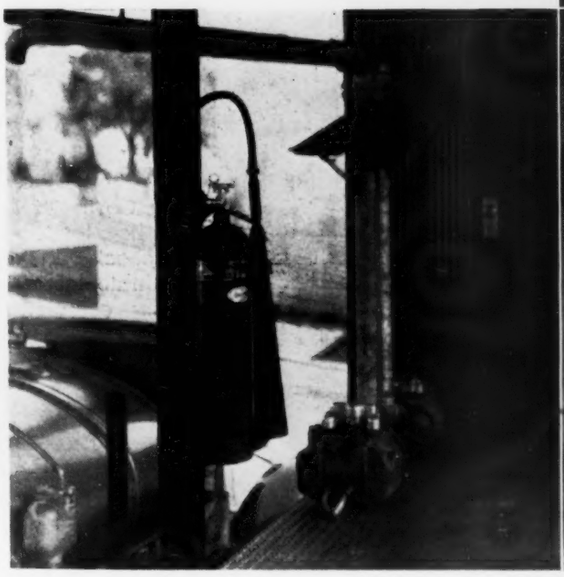
Thirty-nine rotary pumps in this battery at The Pure Oil Co. terminal at Cincinnati, move lubricating oils to the barreling rack. Lube oil storage consists of 32 10,000-gallon tanks, with compartments for storing 39 grades of oil. All electric switches in the plant, including those at the left, are immersed in oil, and have thermal protection against overload

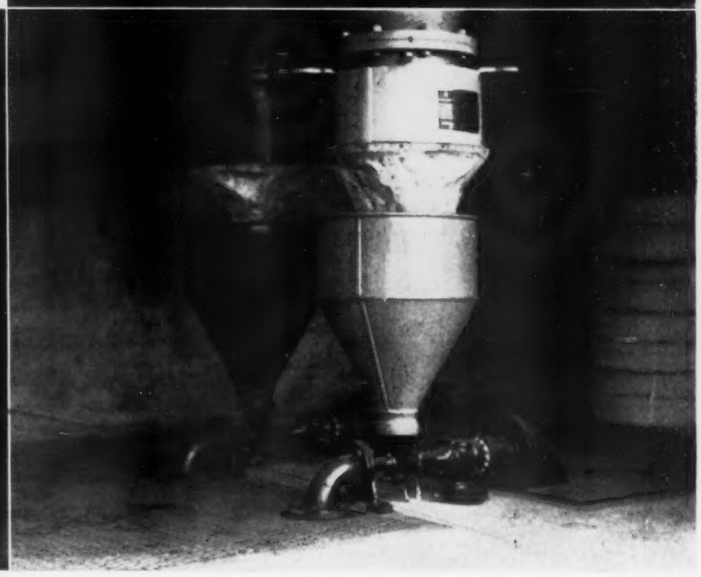


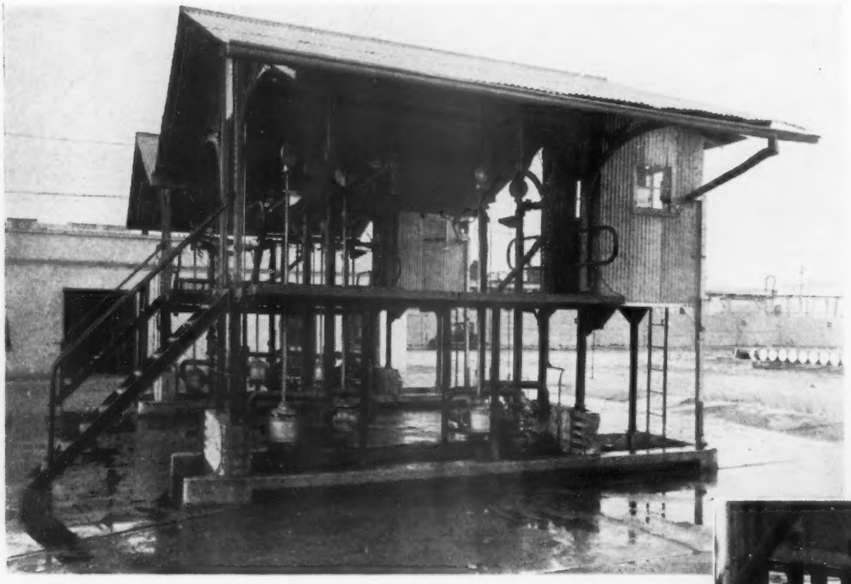
In its glass-enclosed dispatcher's office, Coastal Oil Co., Newark, N. J., has located two batteries of meters and strainers. Pictured here (top right) is one battery of meters from which readings can be taken on the ticket printing indicator.

As part of its fire-protection program, E. Robison Oil Co., Hartsdale, N. Y., (middle) carries carbon dioxide extinguishers on its fuel oil trucks.

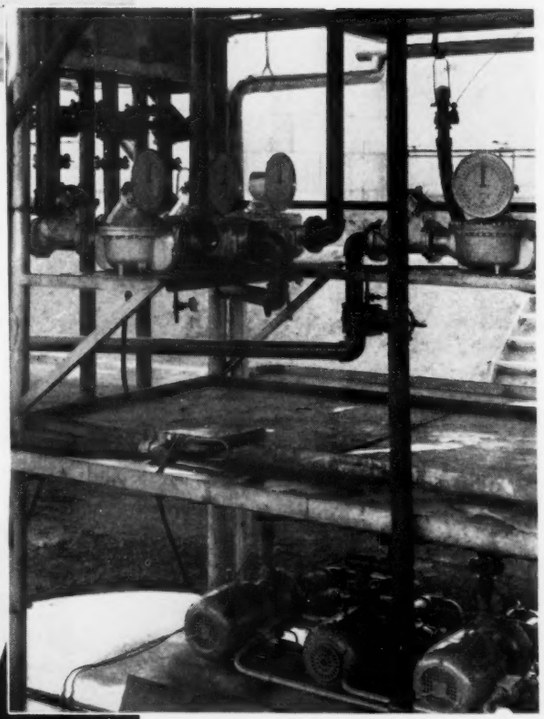
Picture at lower right shows modern foam extinguisher at the L. P. Steuart & Bro. Inc., fuel oil plant at Washington, D. C. providing defense against fire for its 2,000,000-gallon tank. Hopper above each of the two funnels shown is filled with 3750 pounds of two kinds of foam powder. In case of fire, this powder filters into the running water in the pipes to which the funnels are connected. Each of these pipes carries its load of powder-laden water to the top of the 60-foot tank where the two jets mingle, forming fire-fighting foam. At the lower left, is one of several fire extinguishers handily-located on Steuart's loading rack.



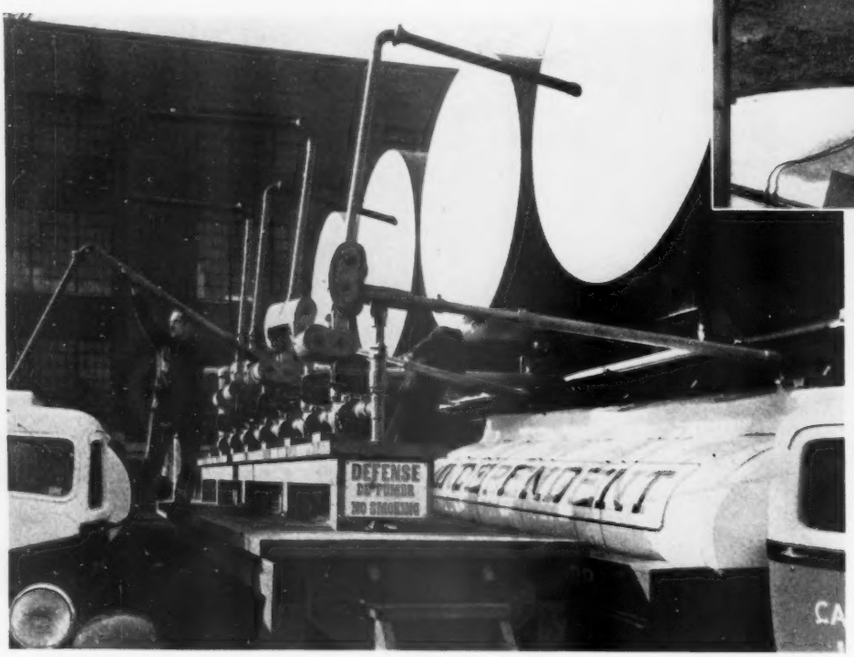




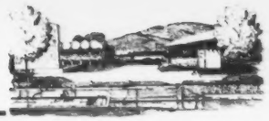
A completely meterized loading rack is this one of the General Petroleum Corp. at its new warehouse in Los Angeles. Meters located directly under the rack have dial extensions for easy reading



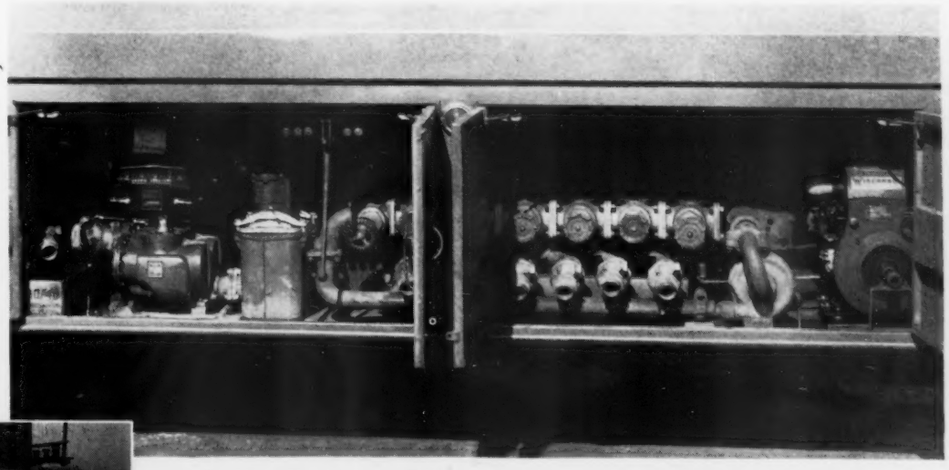
Truck loading at this Montreal bulk plant (below) is facilitated by these modern swing joints, counter-balanced to pull out of the way when not in use. Plant is owned by the Independent Petroleum Corp., Montreal, Que. This Canadian operator is also aware of safety, as indicated by the prominently displayed sign



Loading platform (above) of Louisville Refining Co.'s plant at Louisville, Ky., has four 3-inch meters to check daily loadings and eliminate losses. Pumps and motors complete the layout



In this truck cabinet assembly, a small gasoline-powered engine drives the pump when the meter is in use, instead of using the truck engine for powering the pump. It is equipped with meter, counter and printer for speed and accurate measurement in delivering petroleum products, supplying a printed delivery receipt



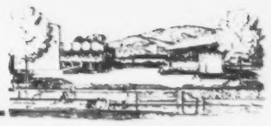
Locating the unloading connections on the side provides greater accessibility in some instances. The unit, pictured on the right, is owned by Martin Oil & Transportation Co. Inc., of Kansas City, Kan.

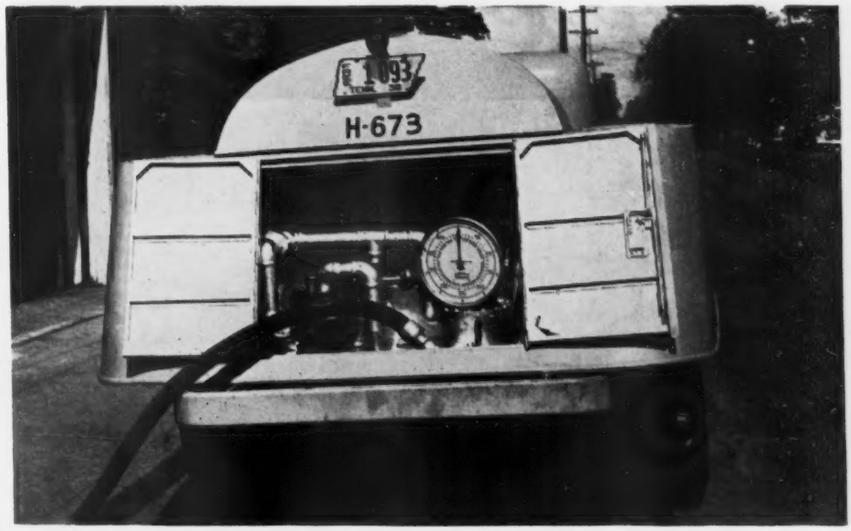
Many service stations being built today have large tankage, permitting the supplier to make larger dumps, fewer trips. To serve such stations, Phillips Petroleum Co. has this tractor and semi-trailer unit of 3600 gallons capacity in Denver

Signal State Oil Co. of Spokane, Wash. uses this streamlined truck to advertise its products while making deliveries. The unit has a three-compartment tank for gasoline, totaling 1450 gallons. Longitudinal springs spaced wide on rear give slow action, synchronizing with fast action of the front to permit the taking of curves safely at greater speed

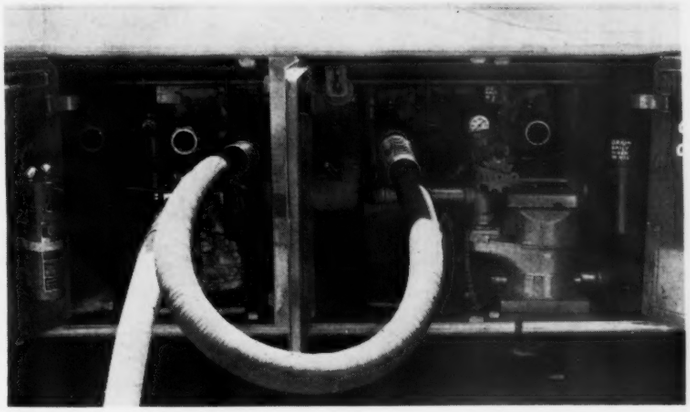
AT LEFT: Top, a 700-gallon, four-compartment truck, with enclosed underslung barrel rack on each side, owned by James W. Tolbert, Waukesha, Wis. Middle, Wadhams Oil Co., Milwaukee, delivers "Mobiloil" products in this five compartment, 1500 gallon capacity unit. Bottom, Lunoil fuel oils are delivered in this 1700-gallon truck of H. N. Lund Coal Co., Lincolnwood, Ill.

This semi-trailer tank (below) belonging to Pure Oil Products Co., Chicago, has 2500 gallons capacity, divided among seven compartments



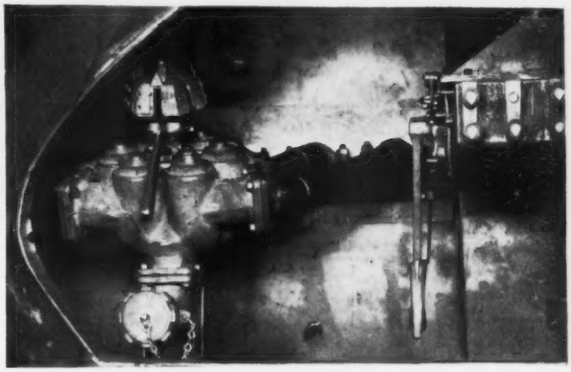


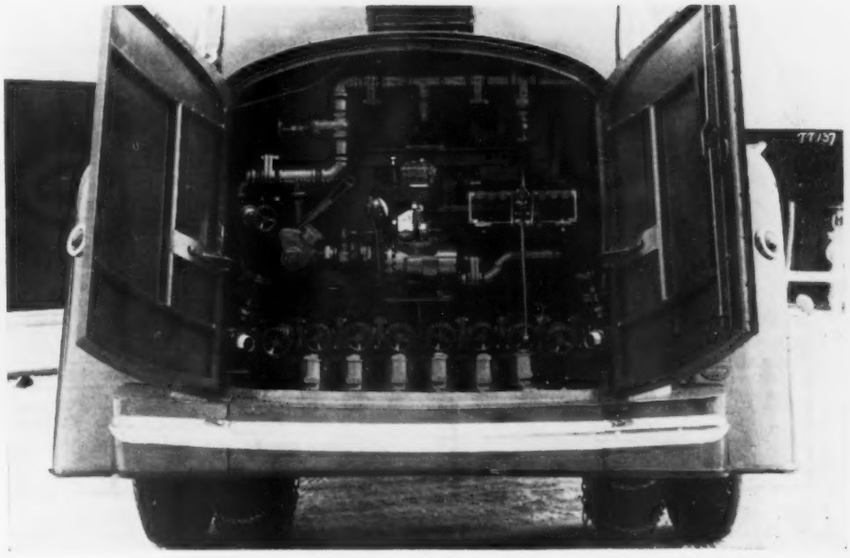
This "rolling filling station" fuels 40 school buses in Davidson county, Tenn., meeting them at scheduled points each day. Of 600-gallon capacity, this truck is equipped with wet hose, meter and pump. Besides delivering gasoline directly into fuel tanks of the buses, this truck also serves underground storage tanks at the county education board's garages



Here is a cabinet assembly for trucks delivering several products on the same trip. Use of a short length of flexible, dry-suction hose permits the coupling up of any compartment for delivery by bucket or through meter or by direct-connected hose for a compartment load

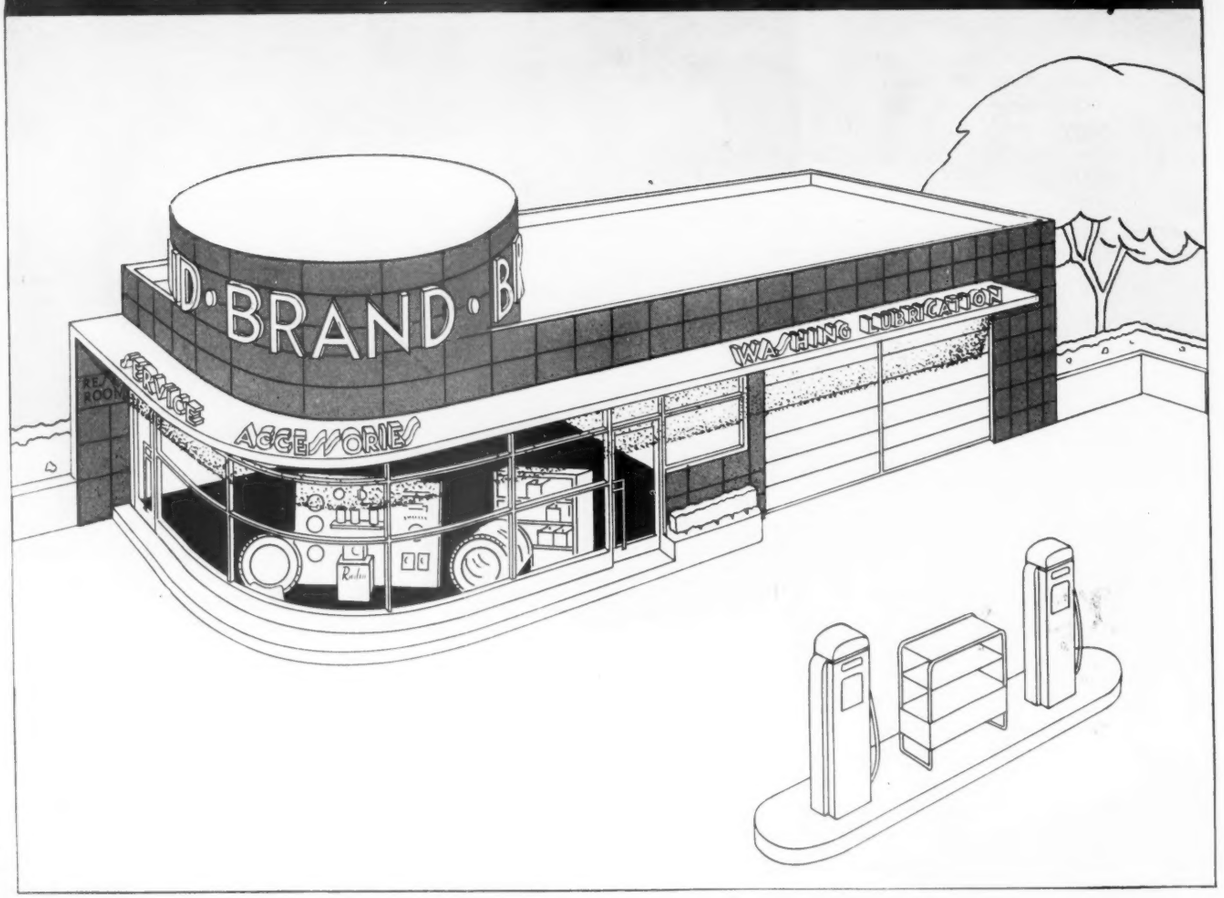
View of a discharge compartment of a modern streamlined delivery truck (below) showing, at right, an emergency valve operator giving selective remote control of any individual valve or combination. Selective manifold valve, at left, for draining any one compartment at a time reduces weight





Rear view of a modern 1500-gallon fuel oil truck owned by the Lewis Coal & Oil Co. at Port Washington, Long Island, N. Y., equipped to meet virtually any demand that might be made on it in making large or small deliveries

Color COMES TO THE FRONT!



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NOW you can have an attractive modern store front in practically any color or combination you want—with this durable, easily-cleaned and trouble-free facing material. Sturdy K.Z.S. Panels are of heavy, extra-flat steel, fused with inorganic porcelain enamel—exceptionally attractive and economical!

The new, complete Kawneer Store Fronts also include rustless metal sash and bars which give maximum plate glass protection—awning bars which hide the awning roll—attractive, economical entrance doors, and other features which mean increased sales and savings for the merchant.

For a complete, colorful store front, in tune with the times, call on Kawneer—originator of the modern store front. Representatives in all principal cities. COUPON BRINGS ILLUSTRATED BOOK.

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The Kawneer Company, Niles, Michigan: Send illustrated booklet on colorful, new Kawneer Store Fronts.

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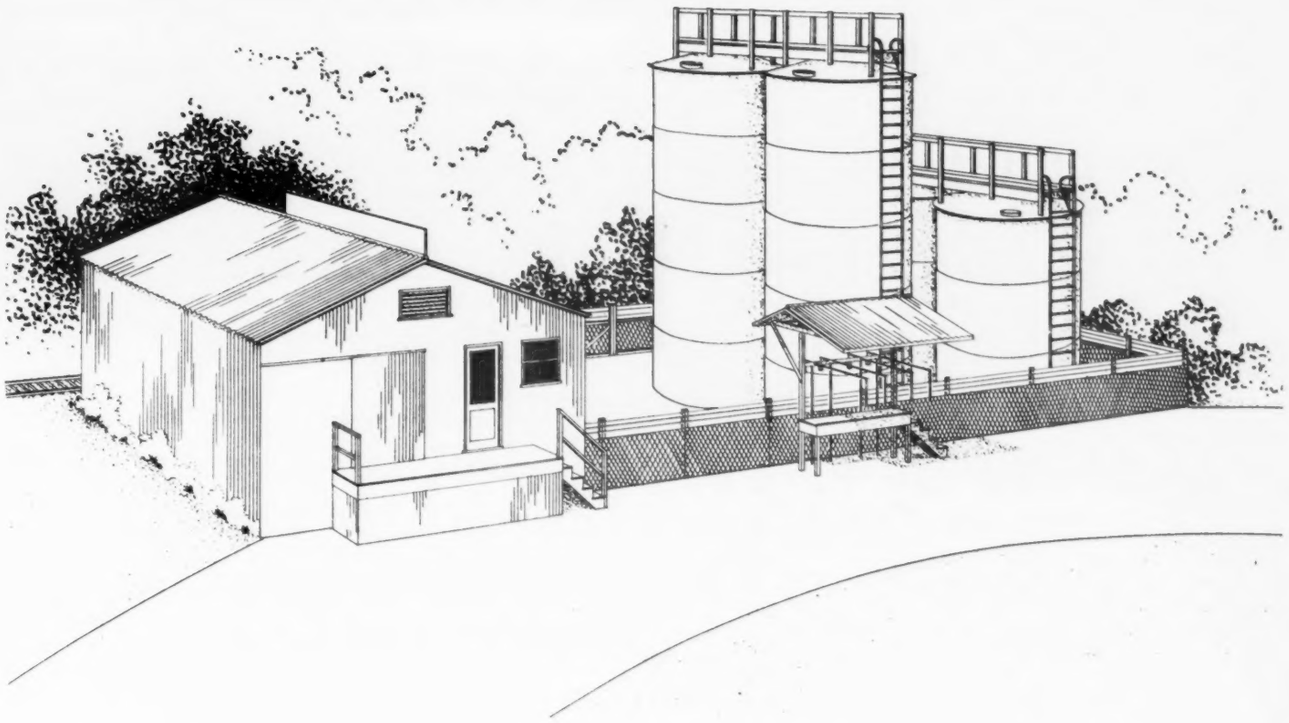
RUSTLESS METAL AND PORCELAIN ENAMEL

STORE FRONTS



This is the standardized bulk plant layout used by Richfield Oil Corp. on the Pacific Coast in sparsely-settled areas where sales volume does not justify a large distributing terminal. Note the compactness of the plant yard, due to locating the loading rack outside on the driveway, thus eliminating the need for space inside to maneuver transports and delivery trucks. Pumping equipment and barrel rack (not shown in the picture) are to the right of the warehouse. The company in 1938 built 42 plants similar to this and is building more this year

West Coast Oil Company Cuts Cost By Using Standardized Bulk Plant

USE of a standardized pattern for bulk plant layout and operating details has its advantages for both the small and large oil marketing company.

Following this policy, Richfield Oil Corp. built 42 bulk plants in the Pacific Coast area last year—and is building more this year. The plants, all of a similar design, were located in areas where the sales volume is small compared with the metropolitan districts. It was found that these plants cost only about one-half of what was spent on those constructed three or four years ago.

Of course, these plants are suited only for comparatively small gallonage. In the metropolitan areas, Richfield—like the other large California marketers—favors centrally located distributing terminals of large capacity, served by a fleet of fast, large-capacity delivery equipment.

For its puposes, though, this standardized bulk plant developed by Richfield (see accompanying layouts) was found to achieve the company's objective of compactness and operating efficiency, plus reduced costs of land and construction.

Size of the ground required has been reduced in the company's layout but without effecting storage capacity or provision for warehouse space.

Most of the saving has been accomplished by eliminating large areas within the plant grounds for turning and maneuvering transport and distributing equipment.

Recommended ground plots are 150 by 70 feet, with the long side fronting the highway. A strip approximately 24 feet wide across the front of this property is paved and provides easy access to the warehouse platform, bulk loading rack, and facilities for unloading transport truck and trailer units.

In general, the arrangement provides for a warehouse, 24 feet wide and 36 feet deep at one side of the plant —usually to the left when facing it. Storage tanks are on the other side of the lot and separated from the warehouse by a 20-foot paved area, which also contains a barrel rack and pumping equipment.

Bulk storage consists of two 12,000-gallon and two 20,000-gallon tanks, al-

Collective Dubbscracking

Four Pennsylvania refiners made history in 1931 when they built the world's first cooperative Dubbscracking unit at Oil City—Pennzoil Company, James B Berry's Sons Co, Inc, Wolverine-Empire Refining Company and Continental Refining Company

Says J P O'Donnell in *Oil and Gas Journal:*

> The plant has operated to the complete satisfaction of the four participating companies
>
> On account of its size the cooperative plant naturally has a lower cost per barrel than any of the companies could have attained individually

Now that size has been increased by 2000 barrels a day to make more Dubbscracked gasoline and cut costs still further They have put in a U O P poly plant, too

Dubbscracking is the way to make gasoline—individually or collectively

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

though this may be added to or subtracted from as may be required. In its new design, Richfield groups all tanks together and in close proximity to the loading rack and to both the rail and transport unloading connections.

Instead of a pump house the plan calls for an outdoor pumping station which is protected by a corrugated-iron hood. The pumping unit consists of twin rotary 2-inch pumps operated by a single 2 or 3 horsepower motor—size depending on amount of storage. Remote control for the pumping operation is provided at the loading rack. Use of 2-inch piping, throughout, is reduced to a minimum by locating the pump station within 20 feet of the loading rack and short-coupling it to the bulk storage.

A complete cross-check on distribution through the plant is provided by 2-inch meters on the loading rack.

Bulk deliveries to storage can be made by either tank car or truck and trailer assemblies, with each plant located so as to have spur rail facilities at the rear.

Excluding the area devoted to spur track and truck driveway—along the front—depth of the plant is 36 feet, with the width sufficient to provide for expansion. In some installations a garage is built on the outside of the warehouse. Fencing is confined to the plant proper, around three sides, with the warehouse closing off the fourth side.

The blue-print below gives complete design for this standardized bulk plant layout, even to the wooden runway and ladders on the tanks, sign along the building's ridge pole, and package shelf in the warehouse.

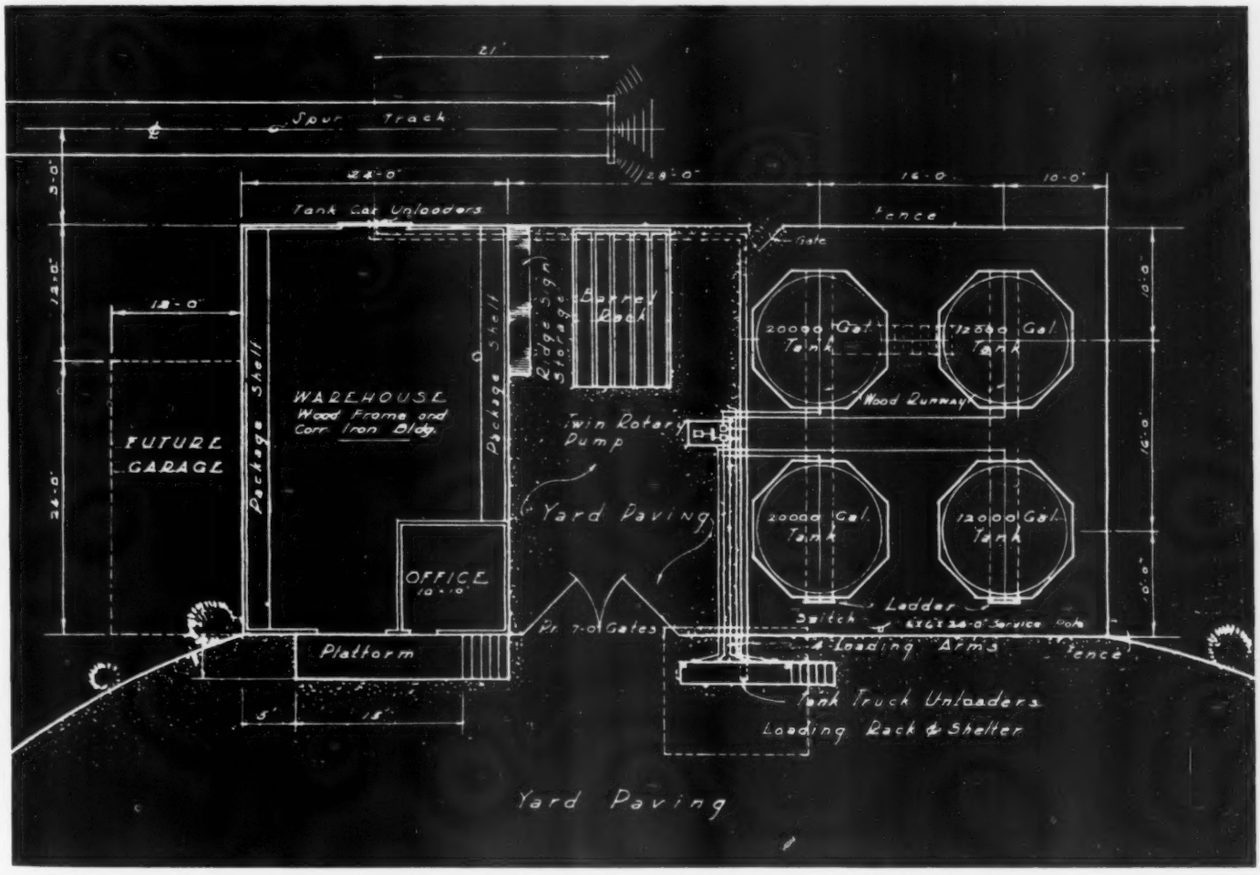
Office space provided in the plan is 10 feet square, but could be widened across the entire front, if need be.

Main building is constructed of corrugated iron with wooden frame. The loading rack shelter is also of corrugated iron, as is the roofing over the barreling rack.

The driveway (only a portion of which is shown in the blue print) swings in from the highway in an easy loop so as to permit easy access by even the largest truck and trailer transports. It is also sufficiently wide to allow for maneuvering of the equipment. While the loading rack is on the outside, provision is made for trucks to back into the yard for loading barrels and packaged goods.

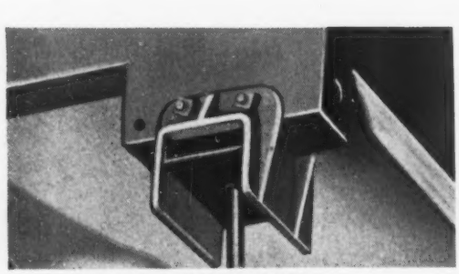
If an oil marketing company contemplating the use of this plan, needs more storage, it can substitute taller tanks for the two 12,000-gallon units or add another battery to the right.

Here is a way to lay out a bulk plant of 50,000 gallons or more capacity on a lot of less than 150 by 70 feet, with the plant itself compressed into considerably less space than that. Rack for unloading transports and loading delivery trucks is outside in the driveway. Gates permit the backing of trucks into the yard to the barrel rack. An outdoor pumping station is included, protected by a corrugated-iron hood; similar material is used for the warehouse-office building and to shelter the loading rack



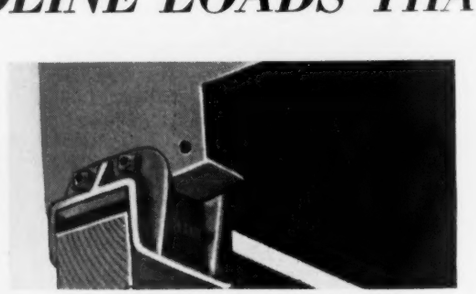
"Floating Ride" SAFETY AND ST

. . . . FOR GASOLINE LOADS THAT RI

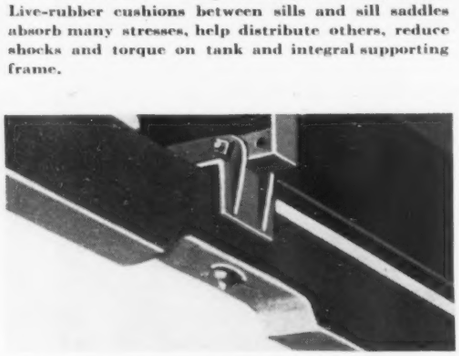


LOAD FLOATS ON RUBBER . . . that's the secret of Butler's amazing "floating ride" for gasoline. Live-rubber cushions between sills and sill saddles absorb many stresses, help distribute others, reduce shocks and torque on tank and integral supporting frame.

TURRET DOME MADE BUTLER FAMOUS! False housing atop tanks for streamline effect add weight and increase explosion hazard. The Butler Turret Dome is a structural strengthener formed directly into the top of the tank shell. (See illustration above.) It gives Butler Truck a BACKBONE which functions as an over-truss. Tied by partitions, heads and gusset bracing directly to the understructure of the tank, the Turret Dome shares in carrying the load.

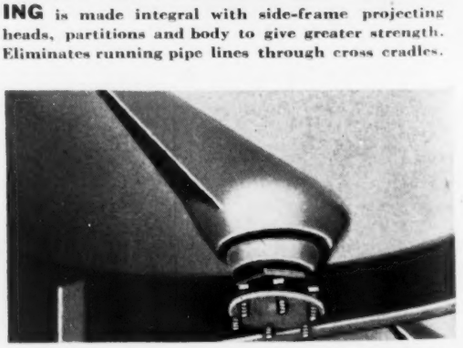


FLANGE-REINFORCED GUSSET MOUNTING is made integral with side-frame projecting heads, partitions and body to give greater strength. Eliminates running pipe lines through cross cradles.



DISTRIBUTES STRESS AND SHOCK! Relieved sill section, directly under frame cross-members, gives greater flexibility for a "floating" kind of ride!

BUTLER
TRUCK TANKS



DRAIN SUMP FULL LENGTH OF COMPARTMENT, combined with sills that slope to rear, provides complete drainage—another exclusive Butler safety feature.

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RIDE IN BUTLER TRUCK TANKS!

No wonder haulers from coast to coast are talking about *and buying*—the amazing new Butler Truck Tanks with "Multiflex Mounting"! . . . Because this advanced engineering feature actually gives gasoline a "floating ride"—in a stronger, lighter tank!

You get more payload, less deadload, and greater safety—in the face of steadily tightening restrictions. "Multiflex Mounting" reduces the stresses on the tanks produced by road shocks and load surges; cuts down vibration; lessens the possibility of cracking.

Best of all, you pay no premium for "Multiflex Mounting"! . . . It comes along with those other exclusive safety and strength features that have made Butler famous for years—such as the Butler Safety Expansion Turret Dome which adds strength by functioning as a load-carrying over-member, and gives each compartment expansion space in direct proportion to its capacity.

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Please send me your Free literature; and furnish me, without obligation, your estimate on _____ gallon, _____ compartment truck tank for: Make of truck and year.....Length behind cab.....

Name .....

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Metering Farm Deliveries Saves Truck Driver's Time

Deliveries to farmers are speedier, there is more opportunity for the farmer to check the quantity, and spillage is eliminated with this meter-equipped tank truck, permitting use of wet hose

An Illinois distributor, with a contract last winter to supply fuel to an excavating contractor, found bucketing took too much of his driver's time and tied up the customer's equipment and trucks, so he installed a pump and meter on his 500-gallon tank truck to make wet hose deliveries. Now, using the same truck for farm deliveries, his driver uses the time saved to solicit new business along his route.

DELIVERY of motor fuels in small quantities, such as to the farm trade and on construction jobs where equipment is filled direct from the tank truck, is going modern along with deliveries of larger quantities to service stations. Metering deliveries is speeding up and making more accurate these smaller fills, replacing the traditional bucketing off of compartments.

For the oil man the metering of small deliveries means a considerable saving of time in filling drums and tanks in barn yards, time that the driver can profitably spend in soliciting more business on his farm route.

For the construction contractor the metering of deliveries means less lost time through equipment being tied up while the fuel storage tank is being refilled. Time is vital when an idle power shovel keeps eight or ten trucks waiting. Refilling takes 30 minutes by bucketing, a few minutes by meter.

Converting a small tank truck, of 400 to 600 gallons capacity, for meter delivery service has been found inexpensive compared to the time saving. The present compartment lines are piped to a pump, driven by the truck engine through a power take-off or by a separate gasoline engine if the oil man wants a portable pumping unit, to the meter and through several lengths of service station pump hose.

Such equipment on a small truck of Robert N. Moore of Decatur, Ill., agent for Sinclair Refining Co., was in service last winter supplying motor fuels for shovels and tractors on an excavation job in Decatur. When the excavation job was finished the truck was put in farm trade delivery service.

Metering farm deliveries of gasoline, kerosine and tractor distillates is profitable Mr. Moore has found on orders of 50 gallons or more. Smaller orders are filled by bucketing.

The time saved in filling drums or larger storage tanks, he estimates, is about ten fold.

To bucket 100 gallons—fill the buckets, let the foam settle and empty the fuel into storage— takes about 35 to 40 minutes, he figures, depending on speed of the driver. The 1¼-inch meter on his truck handles about 35 gallons a minute, so 100 gallons can be dumped in about three minutes.

Mr. Moore's driver, who serviced the excavating job equipment last winter and is now on farm deliveries, cites three advantages of metering, as follows:

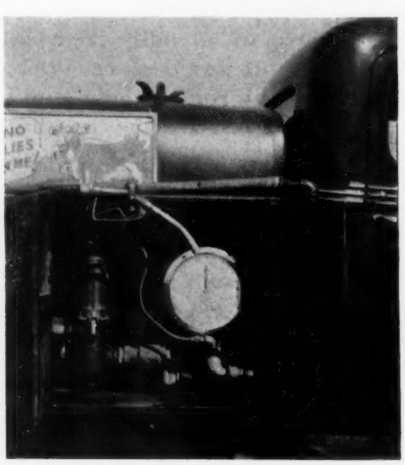
First, there is the elimination of spillage through control of the flow of fuel at the nozzle.

Second, greater accuracy in deliveries. The farmer can read the meter where he would not be likely to stand around and count the number of buckets dumped. On the excavation job last winter the contractor did not keep a record of dumps, but took the driver's own meter readings as proof of quantity delivered, which the driver deems a high compliment.

Third, there is the time saved—even when the farmer's drums are on the ground. If the farmer's tanks are overhead (so his tractor can be driven under the tanks and filled through a hose by gravity) the driver has to climb up only once, with the nozzle, instead of a climb every time a bucket is filled.

The change-over from bucketing to metering truck deliveries started with Mr. Moore when he got the excavator's fuel contract. The day after last Christmas the contractor threw two shovels and 14 tractors on the job. One shovel had a 125-gallon fuel storage tank, the other a 50-gallon tank. The tractor storage tanks ranged from 62 to 75 gallons capacity. The job lasted about two-and-a-half months and about 165,000 cubic yards of earth were moved. During some 24-hour shifts handled as much as 6000 to 9000 cubic yards of dirt and the equipment used fuel fast.

For several weeks the truck serviced the excavating equipment by bucketing fuel. To speed up deliveries, saving



The meter and air eliminator on the small delivery truck of Robert N. Moore, Decatur, Ill., which serviced equipment on an excavation job last winter and now is used on farm deliveries

Swing

The smooth rhythmic swing that only perfect coordination can beget is most apparent in Roper Pumps.

All pumps bearing the name "Roper" are built to the most exacting standards . . . built with a minimum of working parts that only good engineering and long experience can accomplish . . . built with a stamina that only the years can verify.

Yes, Roper Pumps are smooth performers that operate with the lowest possible power consumption . . . and they're easy to install, easy to service.

For bulk plant and truck equipment they're tops!

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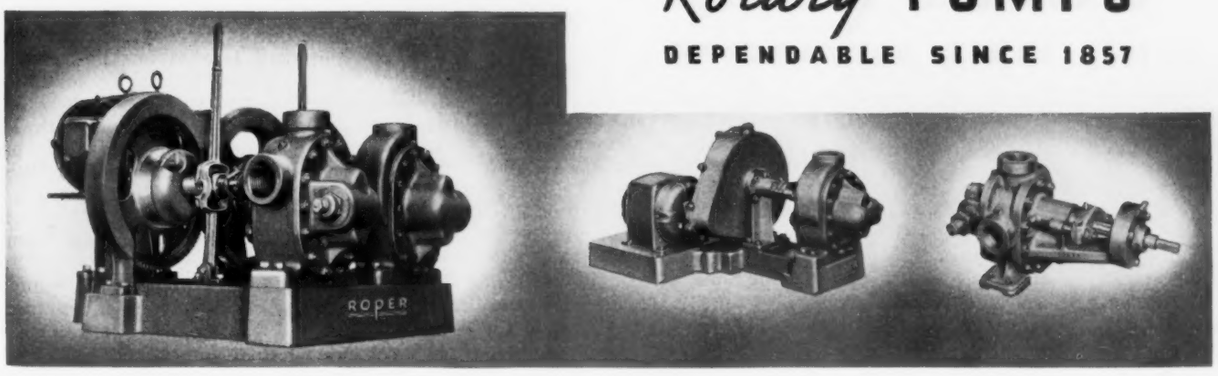
DEPENDABLE SINCE 1857



time for the contractor and his equipment as well as for the oil company, the truck was then meter equipped.

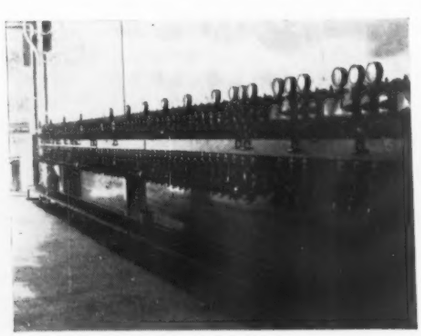
The truck had four compartments, carrying a total of 575 gallons. Originally, it had three compartments, holding 410 gallons, then a fourth compartment was added up front, of 165 gallons capacity. When space was made for the fourth compartment, enclosed bucket boxes were built on both sides of the skirting, between the platform and the cab running board. Now the enclosed bucket box on the right hand side of the truck houses the air eliminator and meter.

The truck has a patented manifold for the four compartment lines. One end of the manifold has a valve for bucketing off fuel, the other end was piped forward to the pump. The pump is driven by a power take-off that costs about $15 to install. The 1½-inch air eliminator has a 200 mesh screen for diesel fuel deliveries, and fuels pass on to a 1¼-inch meter, and then through a 40-foot length of service station pump hose.

The long hose was used during the excavating job deliveries so the truck could pull to within about 25 feet of equipment and reach the storage tank. For farm deliveries only about 20 feet of hose is considered necessary.

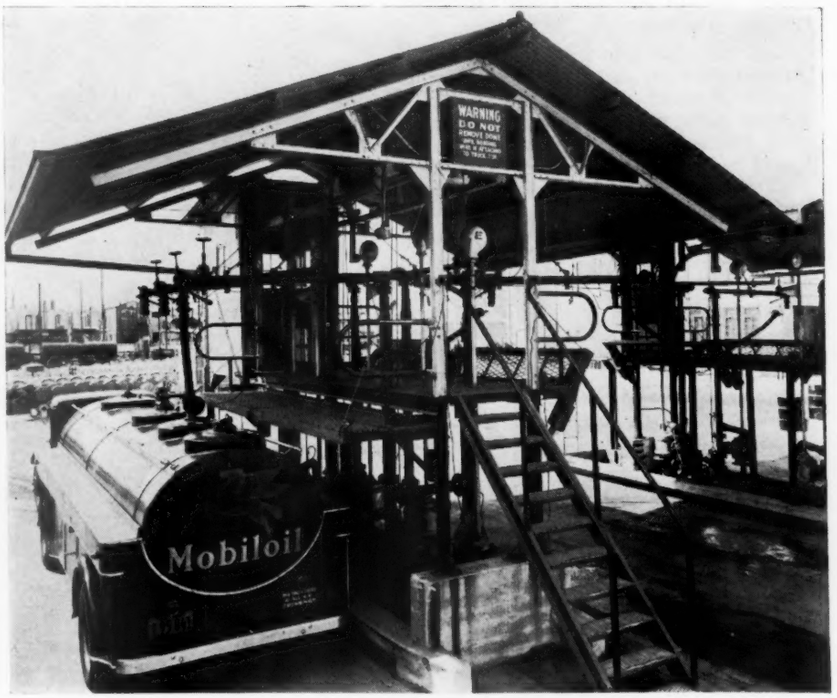
Mr. Moore also made another addition to the truck for the excavating job service. This was a hook, on a piece of V-shaped metal under the front bumper and welded to the truck frame. Driving conditions on the excavating job at times were difficult on account of loose or wet earth. If the truck could not pull through a tractor from the job towed the truck into position to fill equipment. A hitch to the front axle might pull the front wheels out of alignment, or might even pull the front end from under the truck. With the hook, welded to the frame, it was found that the tractor could tow the truck without damage to the front end.

After the excavating job was completed Mr. Moore returned the truck to farm deliveries, making metered deliveries without spillage, and faster than bucketing off the compartments.



Loading spouts at General Petroleum Corp. bulk plant at Los Angeles for filling five-gallon buckets with lubricating oil from 67 tanks

Meters Have 'Long Necks' At New California Plant



One of the modern loading racks at the recently-constructed distributing terminal of General Petroleum Corp. at Los Angeles

To reduce waste motion and thus increase efficiency, a loud speaker has been installed at strategic locations and at various shipping points in the new and modern warehouse and distributing plant recently completed by the General Petroleum Corp., at Los Angeles. This plant will serve southern California trade.

The warehouse, of smart, straight-line architecture, consists of a two-story stucco office building at one end, storage space housing 67 tanks for lubricating oil, and an all-metal and concrete loading rack.

The warehouse itself measures 120 by 300 feet. The office building is 30 by 60 feet. While actual floor space of the warehouse is 36,000 square feet, a "Fork Lift" stacker increases effective storage space to four times this area, or to 144,000 square feet. This stacker permits drums to be stacked four high. It will handle eight drums at a time, transporting them anywhere in the warehouse.

The 67 tanks have a total capacity of 35,000 gallons of lubricating oil. This large number allows for fast and efficient filling of five-gallon lube oil buckets used in making bulk deliveries to the retail trade.

The loading rack, completely meterized with 3-inch measuring units, permits a truck loading rate of 370 gallons per minute through a single discharge hose. A rate of 200 gallons per minute can be maintained with several hoses in use.

A feature of the rack are the dial extensions on the meters. The meters are located immediately under the rack, out of the way, and the extended dials are located on the raised platform for easy reading by loading operators.

The rack is equipped with hinged extensions to the platform, permitting easy access to and from the tank truck top.

This extension is covered with heavy wire mesh, safeguarding operators against slipping. Detachable fill-spout connections are used in submerged loading, and remote control is provided for all loading operations.

The neat appearance of the building is enhanced by the grounds, shrubs adding to its general attractiveness.

HERE IS THE NEW TANK VENT THAT ASSURES YOU

50% to 75% Savings IN EVAPORATION LOSS

POSITIVE and unfailing protection under all conditions . . . complete freedom from repairs, adjustments and mechanical attention . . . a 50% to 75% reduction in present evaporation loss. Those are three of the basic advantages of ECONO-VENT—three reasons for a nationwide sweep to this new and better venting method.

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ECONO-VENT's phenomenal record is based on a fundamental advance in design—the revolutionary LIQUID-SEAL principle, fully covered by patents issued and pending.

When storage tank is being filled (FIG. 1) the outflowing pressure first forces LIQUID-SEAL from the lower to the upper chamber; then, as maximum pre-determined pressure is attained, air bubbles out through the LIQUID-SEAL and escapes through outlet pipe into the atmosphere.

When storage tank is being emptied (FIG. 2) air enters the center pipe, forcing LIQUID-SEAL into lower chamber; when maximum rated vacuum is attained, the air bubbles out of the sealing-liquid and into the tank.

"Breathing" caused by fluctuations in temperature is confined entirely within the chambers of ECONO-VENT. The process of evaporation is constantly equalized by the process of condensation within the tank.

FULLY COVERED BY U. S. PATENTS ISSUED AND PENDING

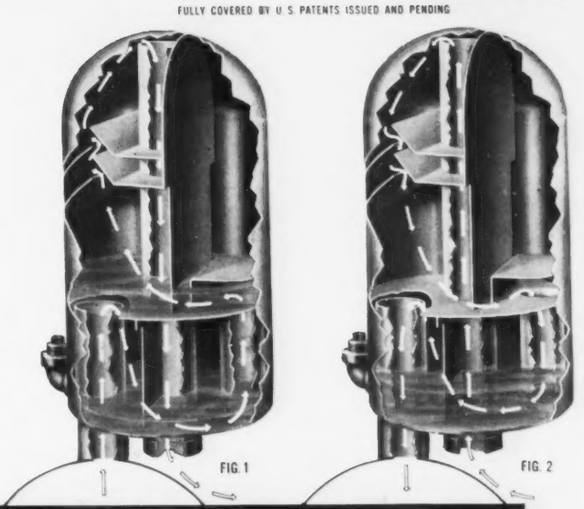

FIG. 1 FIG. 2

And here are ECONO-VENT'S 7 Basic Advantages

(1) CUTS EVAPORATION LOSS 50% to 75% by actual test; (2) PROTECTS equipment against buckling or bursting—because relief action is independent of mechanical parts which may bind, freeze or otherwise fail; (3) KEEPS OUT DUST; (4) KEEPS OUT MOISTURE; (5) MINIMIZES FIRE HAZARD; (6) PRESERVES QUALITY by minimizing loss of gravity; (7) ELIMINATES UPKEEP—no mechanical parts; no mechanical attention required. ***Write for complete information.***

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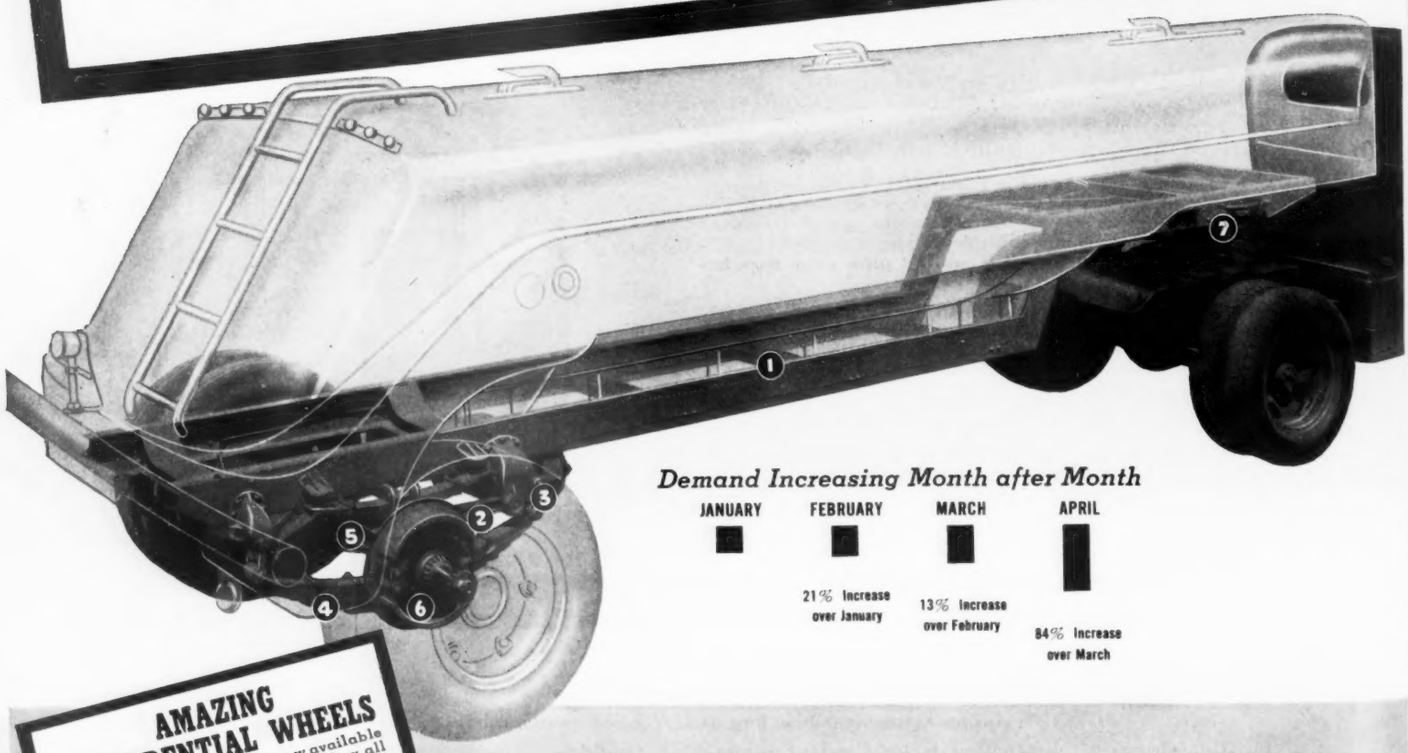
SAVE WITH Econo-vent LIQUID SEAL TANK VENT

***The New Type Tank Vent with the Revolutionary* LIQUID SEAL**

IT TAKES MORE THAN A TANK TO MAKE A *good* TANK-TRAILER!



Demand Increasing Month after Month

JANUARY	FEBRUARY	MARCH	APRIL
	21% Increase over January	13% Increase over February	84% Increase over March

AMAZING DIFFERENTIAL WHEELS

Dual Differential Wheels, now available exclusively through Fruehauf, allow all Trailer tires to rotate independently of one another—eliminating the tire scuffing and skidding that occur with conventional dual wheels.

As a result, TIRE LIFE IS DOUBLED. But equally important, eliminating this source of drag on tires means less drag on your engine, MORE HORSEPOWER released to increase efficiency.

You can use this bonus horsepower (1) to increase payloads without increasing engine size, (2) to reduce running time with your present payloads, or (3) to cut gas and oil costs without changing loads or speeds.

FRUEHAUF TRAILERS

MORE FRUEHAUF TRAILERS ON THE ROAD

IT'S not to depreciate the importance of good Tank construction that we say: "It Takes More Than a Tank to Make a Good Tank-Trailer."

We say it because a Tank-Trailer is fundamentally a Trailer. A Trailer which carries a load particularly hard on body, chassis and running gear.

A Tank-Trailer must have a sturdy frame to withstand the constant surge of liquid loads . . . An undercarriage perfectly aligned to produce easiest pulling for lowest gas, oil and tire costs . . . Scientific spring construction to cope with loads which are alternately very heavy and very light . . . Brakes built to withstand the hard usage of gasoline haulage . . . And a strong, safe connecting link between tractor and Trailer which imparts stability to both units.

It's only natural that engineers of the company producing *more Tank-Trailers than all other manufacturers combined* should have solved these problems. There is no substitute for experience. The chassis of Fruehauf's new featherweight line for '39 meet every requirement for sturdiness, springing, easy pulling and positive stopping. They're the last word in "what it takes," *besides a Tank,* to make a good Tank-Trailer.

Moreover, these Fruehauf chassis are combined with a line of featherweight Tanks, ranging in capacity from 2000 to 5000 gallons, to form the most complete Tank-Trailer line in the industry.

For complete facts, consult your nearest Fruehauf representative.

World's Oldest and Largest Manufacturers of Truck-Trailers

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Sales and Service In Principal Cities

"Engineered Transportation"

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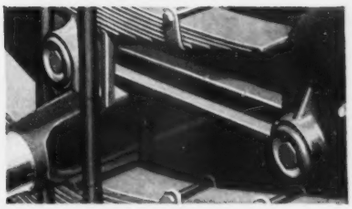
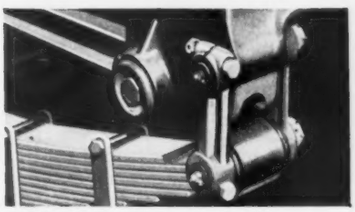
THAN ANY OTHER MAKE

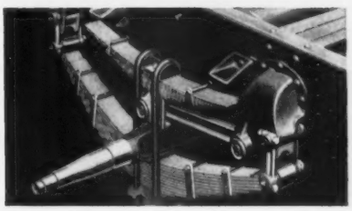
1 Frame relieves tank of all pulling and brake torque strains. Permits perfect alignment of running gear. Simplifies service.



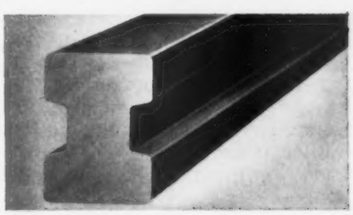
2 Rubber-mounted radius rods maintain perfect axle alignment, leave springs free to cushion the load, insure easy-pulling.



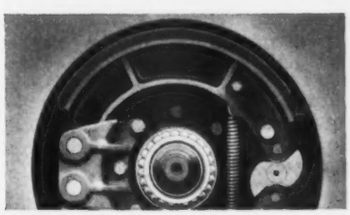
3 Shackled springs, made possible by radius rods, provide roller action, increase cushioning of vehicle and load. All wearing parts bushed—easily serviced.



4 Flexible main springs which provide adequate springing while running light, plus auxiliary springs which insure a completely cushioned unit when loaded.



5 Fruehauf's exclusive I-Beam axle. One-piece drop forging of chrome-molybdenum steel, double heat treated—40% stronger.



6 Mountain-type brakes, designed exclusively for Trailers. Meehanite ribbed drums . . molded linings . . ball bearing mounted cam.

7 New, lightweight, all-steel rocking Upper 5th Wheel eliminates all twisting strains on tank and chassis.

NATION-WIDE SERVICE FACILITIES

Fruehauf's exclusive nation-wide service facilities are doubly important to the Tank-Trailer operator with his specialized service problem.

Profit Hints for Fuel Oil Distributors

Here are the results of interviews by an N.P.N. staff writer with seven leading fuel oil distributors in the Chicago district on how they handle the problem of spillage, guard against fire hazards and personal injuries, cut down waiting time of drivers, speed up deliveries and otherwise improve efficiency of their operations.

New Loading Rack Stops Congestion

A traffic cop is not needed now even at peak loading time at the West Side fuel oil bulk plant of Spencer Petroleum Co., Chicago, since the company added another pump house, a three-spot loading rack and three storage tanks during the past winter to relieve congestion.

At the peak of fuel delivery, the plant can push 1200 gallons of oil a minute, through two pump houses and into six trucks loading at two racks.

The flexibility of operation, achieved by these additions, has speeded up loading of trucks, relieving congestion—eliminating the "waiting line" of trucks.

Three rotary pumps, with individual electric motors have been installed in the new pump house, with a manifold system which permits pumping in any direction — between storage tanks, to truck loading racks, or unloading transports and tank cars.

Linked by the manifold system, which has 24 valves, the three pumps are correlated so that if either fails the work can be shifted to the remaining operating pumps.

Powered by 10 and 7½ horsepower motors, two of the rotary pumps have four-inch intake lines and three-inch lines leading to the loading racks. The other pump, driven by a 7½ horsepower motor, has three-inch intake and outlet lines.

The new pump house is a separate building with sheet metal exterior and a concrete floor. It is heated by a steam radiator and the interior wall is plastered for insulation. The pump house has two inlet lines from tank car spots and one from truck transport spots, which run into the manifold system.

Outlet lines from the pumps pass overhead to the new three-spot loading rack and fill lines are so placed that they can be swung over two loading spots.

Three vertical 20,000 gallon tanks, added to Spencer's West Side plant, provide space for Nos. 3, 5 and Bunker C oil. Lines from the pump house to the No. 5 and Bunker C storage tanks have insulated one-inch steam piping directly on top. All steam lines in the plant to coils in storage tanks are boxed with insulation to keep lines clean and also providing paths for workers.

Beside the three tanks, the bulk plant has six horizontal 25,000-gallon tanks; one each used to store range oil, No. 1, 3 and 6, the other two for No. 5 oil.

When construction work is completed the three vertical tanks also will be connected with the six horizontal tanks, providing a flexible use of storage facilities through the manifold system. Upon completion of this work the old and the new pump houses will complement each other, unloading oil from transports or tank cars and pumping by either house to the nine storage tanks or to the two loading racks.

★ ★ ★

Drivers Alternate In Filling Trucks

Beginning the day's work delivering fuel oil by the Arrow Petroleum Co., Oak Park, Ill., is speeded up by having the trucks all loaded and ready for the drivers to wheel on the street when they report for duty.

The trucks are loaded during the hour before the work day starts. The plant has 10 drivers who alternate in coming down an hour earlier each morning for one week, at overtime pay, to load all the trucks. When the other nine drivers report their equipment is all ready to roll.

During the day the drivers load their own trucks. After pulling into the plant the driver gets his tickets for the next load from the office, then pulls to the loading rack for oil.

To reduce the amount of oil returned in trucks the company has the driver telephone the office after the last delivery and before returning to the plant, if there are 200 gallons or more on the truck. This is in case an order has come in where the remaining oil can be dumped.

★ ★ ★

Spillage Dangers Cited To Drivers

Spillage during delivery is a headache that confronts all fuel oil distributors. Here are some of the precautions which Chicago distributors take:

The Commerce Petroleum Co., Chicago, has instructed its drivers whenever possible to measure the storage tank before beginning the fill. If the stop is a new one for the driver he is to first study the venting arrangement. Gauges are not to be trusted, the company says, especially on 275-gallon tanks and the driver is to take off the plug and measure the contents just in case the gauge is stuck.

If the driver is not allowed in the basement, or the customer is not at home, the driver is to set up the hose, start the oil flowing slowly, and listen at the vent pipe for the gurgle indicating that the tank is full.

Measuring customer's fuel oil tank before and after a fill to avoid spillage, is a rule with the Arrow Petroleum Co., Oak Park, Ill. The readings are noted on the delivery ticket. Arrow Petroleum has two trucks to fill orders on 275-gallon storage tanks, and these trucks each have a driver and a helper. The helper handles the hose. The driver is in the basement, watching the gauge, and when the tank shows full the driver taps on the fill line to indicate to the helper that the delivery is completed.

Suburban Oil Co., Oak Park, also enforces a rule that the tank must be measured before and after filling. The drivers carry standard charts showing volume of oil in various size tanks based on inch measurements. Where the vent pipe is by the fill line on inside tanks the driver is instructed to also listen for the gurgle.

An inspection of the hose is made at the plant every two weeks by the Apex Motor Fuel Co., Chicago, as an

AUTO TRAVEL HITS NEW HIGH!

And Cities Service Dealers get a big slice of it with these extra **"KEYS TO PROFITS!"**

This year, motorists have more reason to travel. The World's Fair alone is the goal of millions! Cities Service product advertising ties in with this spirit of travel. The facilities and resources of 16,000 Cities Service Dealers are ready to prove that "SERVICE IS OUR MIDDLE NAME!"

In addition to selling quality products, high in popular favor, these dealers are equipped to offer valuable *extra* services that mean increased sales — hence *extra* profits. The Touring Bureau plans any trip a motorist wants to take. It tells him the quickest, safest, most convenient ways to go—tells him what to see en route. This service is prompt, thorough and works on a 24-hour basis. Cities Service new and improved road maps in four colors are always in great demand. They are complete in every way —easy to follow. This year, a special World's Fair map is available. It gives all the best routes from any point. These aids to motorists are great sales makers!

The Cities Service "Keys to Profits" program is made up of practical selling helps. It includes proved merchandising methods that boost business. You can make the "Keys to Profits" Program produce for you—as it does for others. Get all the details today — from the nearest office listed below.

FOR YOUR ENJOYMENT ● NEW THRILLING RADIO DRAMA every Friday evening at 8 o'clock E. D. T. Hear an exciting chapter of the "Romance of Oil." This is a special feature of the Cities Service Hour. The program also stars Lucille Manners, Ross Graham, Frank Black and the Cities Service Singers and Orchestra.

CITIES SERVICE OILS AND GASOLENES

CITIES SERVICE OIL COMPANY, Chicago . . . New York . . . Cedar Rapids . . . Boston . . . St. Paul . . . Grand Forks . . . Kansas City . . . Fort Worth . . . Tulsa . . . Milwaukee . . . Cleveland . . . Detroit

CITIES SERVICE OIL COMPANY, LIMITED, Toronto, Ontario

ARKANSAS FUEL OIL COMPANY, Shreveport . . . Little Rock . . . Jackson, Miss. . . . Birmingham . . . Atlanta . . . Charlotte, N. C. . . . Nashville . . . Richmond

added precaution against breaks. Trucks also carry pans to be placed under connections in the hose.

Spencer Petroleum Co., Chicago, provides canvas mats for its trucks, to place on the ground under the fill line connection to catch any drippings. The company also keeps a close check on hose nozzles so the oil will not drip.

Experienced drivers who know the storage tank piping arrangement are the best precaution against spillage, the Great Northern Oil Co., Chicago, reports. By having the same driver filling tanks the driver gets to know the peculiarities of each hook-up, such as whether one tank in a two-tank arrangement fills faster than the other or whether both fill at about the same rate, and through this knowledge avoids spills. The company has the driver stand by the vent pipe to listen for the gurgle. On keep-full orders the drivers read the tank gauge before and after filling.

The Bell Oil Co., Chicago, with two men on its trucks delivering range oil, has the driver take the order and handle the nozzle while the helper operates the truck end of the hose. Part of the helper's job is to warn pedestrians away from the hose. At night the company has red lanterns as additional warning.

A metal sign standard that fits over the hose and rests on the sidewalk is the warning device used by the Great Northern Oil Co. The sign reads, "caution, Watch Your Step." Similar warning signs are used by Arrow Petroleum, Commerce Petroleum, and Suburban Oil.

Arrow Petroleum and Commerce Petroleum, on night deliveries, direct a light from the truck to illuminate the sign.

An electric lantern with a red bulls eye in both directions is the warning device used by Spencer Petroleum. The red light can be on steady, or it can be flashing off and on to warn pedestrians.

Chicago city ordinances require that the trucks have three red lights on the rear, the three amber lights in front, in addition to the usual headlights and rear red lights. Trucks also have reflectors on the sides, at least every eight feet, and directional lights in the rear to warn motorists of a right or left turn.

★ ★ ★

Portable Extinguisher Kept in Plant Office

Fire prevention equipment at the plant of the Suburban Oil Co., Oak Park, consists of a 40-gallon portable extinguisher, and five 5-gallon extinguishers in plant buildings. The portable extinguisher is kept in the yard office. The door is large enough to get the extinguisher in and out, and the company considers this the best location in the plant as someone is always in the yard office in case the extinguisher needs to be used.

★ ★ ★

Smash Goes the Bottle, And Out Goes the Fire

Glass bottles containing a quart of tetrachloride are suspended from the ceiling of yard buildings at the fuel oil plant of the Arrow Petroleum Co., Oak Park, as a fire prevention measure. In case of fire the string would burn, dropping the bottle and breaking it on the floor. Each year the strings are renewed.

Drivers Cautioned To Back Up Slowly

The fuel oil delivery has been completed, the hose is back on the reel, the truck is ready to back out to the street—and there is the point for the driver to be cautious lest the truck strike a person causing death or injury.

Chicago fuel oil distributors take the primary precautions of putting two rear vision mirrors on their trucks and warn their drivers to back up slowly. Fortunately, the distributors interviewed by NATIONAL PETROLEUM NEWS reported no personal injury cases caused by a truck back up.

Drivers of the Spencer Petroleum Co., Chicago, have been advised of the danger in backing a truck and instructed to look in both rear vision mirrors, "gun" the engine so that the noise will warn passersby, and then back up slowly.

Two rear vision mirrors are on trucks of the Suburban Oil Co., Oak Park, Ill., and drivers have been cautioned to look carefully before backing. Company officials point out that someone could slip back of the truck in the time it takes for the driver to leave the rear and climb into the cab.

Bell Oil Co., Chicago, distributes range oil, and there are two men on each truck. During a delivery the driver takes the order and handles the hose nozzle at the fill pipe, the helper stays at the truck pump. When the truck has to back up the helper is stationed at the rear, to make sure everything is clear and to guide the driver.

A company rule of the Great Northern Oil Co., Chicago, is that the driver

The Great Northern Oil Co., fuel oil marketer in Chicago, thinks highly enough of the advertising value of its delivery trucks it has them painted in a passenger car body paint shop. The trucks are relettered every other year. In the background is the company's north side plant

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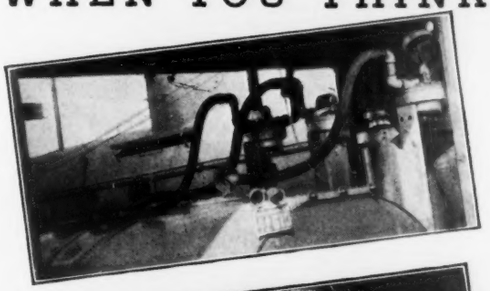

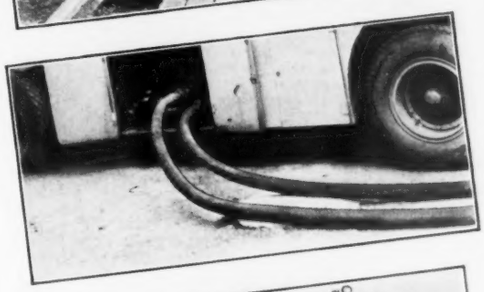

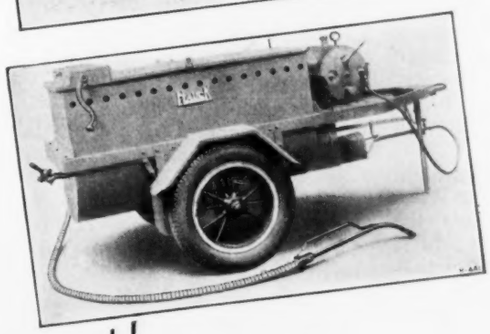

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first must take a quick look at the rear of the truck before getting into the cab, then use extreme caution in getting the vehicle into motion. Drivers also have been instructed to be stern about children playing around a truck at any time during a delivery.

Great Northern also has cautioned drivers to make complete stops in coming out of an alley into a street, and be cautious in passing a street car coming from the opposite direction that has stopped to discharge passengers. Persons coming off the car can dart around the rear into the path of a truck moving in the opposite direction.

The Arrow Petroleum Co., Oak Park, Ill., has some delivery trucks with two men, and when one of these trucks is backing the helper is stationed at the rear. On one-man trucks the driver uses the mirrors to check the rear, then backs slowly.

When storms strike during the winter Arrow Petroleum puts an extra man on its trucks, to shovel snow when necessary and otherwise help so that the driver will be under no additional strain. In the summer time the company assembles tire chains at its main plant for inspection and replacement of worn or broken links. The company equips all wheels on the tractors and semi-trailers with chains. Experience has shown that when chains were placed on only one dual wheel it dug into the ice and snow, leaving the tire without a chain spinning on the ice.

★ ★ ★

Siren Sounds Fire Alarm

A siren has been placed in the yard of the Great Northern Oil Co.'s fuel oil plant to warn of fire. When the alarm sounds all employes come to the siren and the plant superintendent takes charge as fire chief.

★ ★ ★

Plant Man Has Trucks All Ready for Drivers

Loading of trucks at the fuel oil plant of Suburban Oil Co., Oak Park, is speeded up by having the plant man fill the trucks. The driver pulls up to the loading rack and the plant man checks the quantity of any oil returned and refills the compartments. Meanwhile, the driver checks in at the office for the previous trip, then returns to the rack to help the plant man load.

The loading rack has three-inch lines, with two sleeve spouts, so that two men can load one truck and reach all four truck compartments without moving the truck.

Foam Eliminator Speeds Loadings

A foam eliminator to keep down air bubbles and speed truck loading of heavy fuel oils is in service at the West Side bulk plant of the Spencer Petroleum Co., Chicago.

When a truck compartment begins to foam a small quantity of light oil under air pressure is sprayed in the compartment, and the air bubbles are eliminated in a few seconds. Formerly several minutes were required to eliminate the bubbles in running the truck back and forth, and then resume loading.

A 20-gallon tank is outdoors near the loading rack, holding distillate or kerosine. Air is obtained from the compressor in the truck garage through a mixing valve. A hose runs from the tank to the loading rack with a spray nozzle on the end.

When foam begins to rush to the top of the compartment as the loading is about completed, the plant man takes the nozzle and sprays about half a pint of light oil in the compartment to break up the bubbles.

★ ★ ★

Watchman Watches Out For Plant's Night Man

As a precaution against the night man being injured and not being found until the day force arrives, Arrow Petroleum Co., Oak Park, Ill., has an arrangement with the night watchman at an adjoining lumber yard to check the bulk plant on a regular schedule.

Every hour the lumber yard night watchman comes over to Arrow's plant to see that the bulk plant night man is all right. The lumber yard night watchman also pulls three boxes every hour at the bulk plant, one in the office, the pump house, and the boiler room.

About a year ago the bulk plant night man was unloading a tank car when the catwalk broke. Fortunately the man landed on his feet, without injury. It is just such mishaps as these that the company is guarding against, and in case an accident should be serious the night watchman would find the plant night man within the hour.

★ ★ ★

Night Man Loads Trucks

The night man loads fuel oil trucks at the plants of Spencer Petroleum Co., Chicago, in the early morning hours so the equipment is ready to begin deliveries when the drivers report.

When trucks return during the day there are two men at the plant to handle the loading. One plant man starts the loading as soon as the truck reaches the rack. The other plant man handles records and after checking in the driver for the previous trip and giving him a route for the next trip, goes out to the rack to help finish the loading.

This loading arrangement gives the drivers a chance to "thaw out" indoors, before starting another trip.

Fuel Oil Demand Stages Comeback in 1938-39

N. P. N. News Bureau

CLEVELAND, May 26.—A steady increase in domestic demand for all grades of fuel oils has taken place since the beginning of the 1938-1939 heating oil season, beginning in November, as compared with the previous 1937-38 season according to the U. S. Bureau of Mines.

Total domestic demand from November, 1938, to March, 1939, inclusive, was 207,848,000 barrels, as compared with 191,107,000 barrels for the corresponding period of a year ago, an increase this year of 16,741,000 barrels, or 8.76 per cent.

Following figures show increase by months for 1938-39 season over similar months of the 1937-38 period:

(Thousands of Barrels)

Month	1938-39	1937-38
November	39,093	37,696
December	45,443	43,464
January	44,108	38,486
February	38,829	35,278
March	40,375	36,183
Total for 5 Months	207,848	191,107

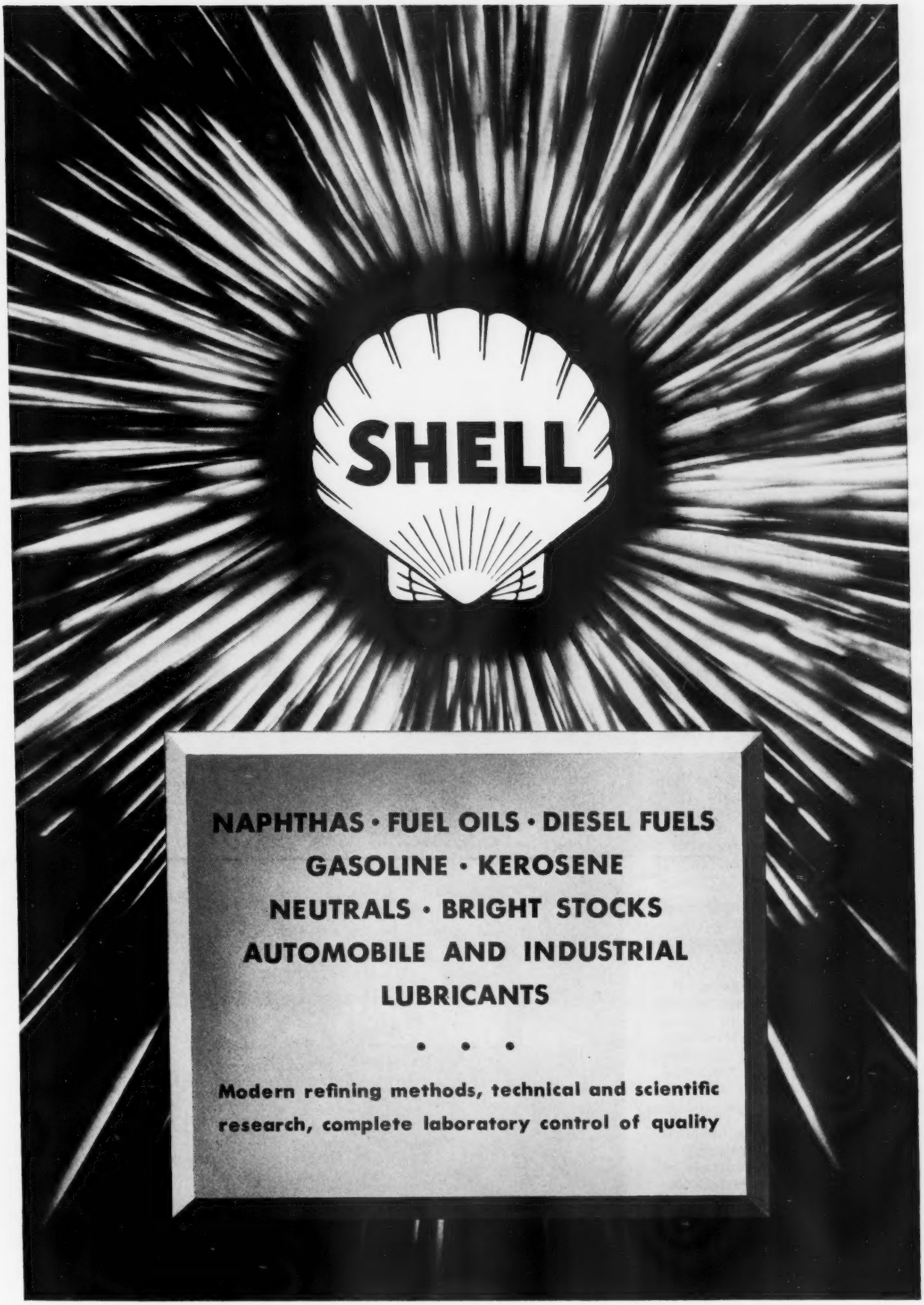
Burner Shipments Recover

Shipments of distillate oil burners did a come-back in the first quarter of 1939, with 37,639 units delivered, compared with 19,637 in the same period of 1938. Shipments in the 1939 first quarter were only 8.1 per cent under the peak year of 1937, when 40,945 were shipped.

Shipments in March, 1939, were 17,626, compared with 7301 in the same month last year and 22,942 in 1937.

February, 1939, deliveries, however, were greater than the peak year of 1937, with 11,367 units shipped, compared with 9321 in 1937 and 5294 the same month last year.

WASHINGTON—Airplanes in regular scheduled airline service consumed 45,310,192 gallons of gasoline and 829,870 gallons of oil during 1938, Civil Aeronautics Authority reports. They flew 81,058,127 miles during the year.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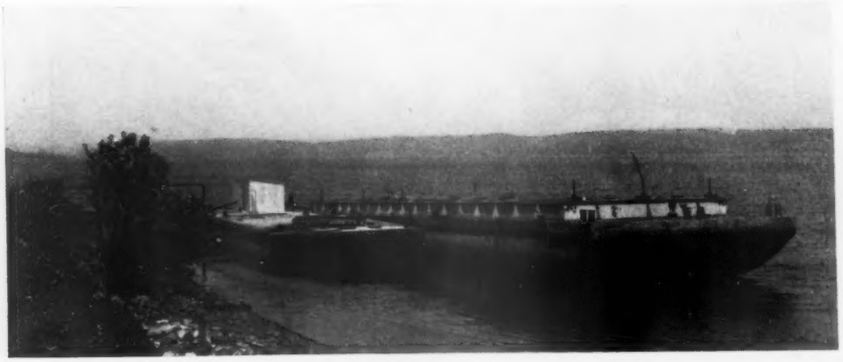
Oil Jobber Builds Unique 'Marine Terminal'



Here is a 300,000-gallon barge delivering gasoline from the refinery to marine terminal on Illinois river at Peoria where local restrictions made it necessary to put the unloading equipment on a barge, anchored so as to rise and fall with the water level

PEORIA, Ill.

HOW to build a "water terminal" on the Illinois river here, when government regulations prohibit the erection of a wharf, was the problem facing Sweney Gasoline & Oil Co. last winter. But it was solved. Here's how:

A pump and power unit on the deck of a barge moored along the river bank and about 600 feet of pipeline to storage tanks converted Sweney's bulk plant into a marine terminal—the first in Peoria, Illinois' second largest city.

Mooring a barge at the river bank to house the barge unloading equipment was necessary on account of local restrictions.

Railroad yards were between the bulk plant and the river bank, leaving no room for a pump house on private property, and War Department engineers won't permit erection of a permanent structure right on the bank, so a barge was towed in and anchored to shore.

Unloading equipment was installed on the anchored barge, consisting of a 750 gallon per minute pump, a 50 horsepower electric motor and motor-starting equipment—all enclosed in a sheet-metal house.

Two pipelines from the bulk plant were buried about four feet under the railroad tracks, emerging at the top of the river bank. One is a 12 inch spiral pipe housing a six inch welded gasoline pipeline with a gate valve out in the open. The other is a three inch line housing the 220 volt electric line, terminating in a switch box near the gasoline pipeline gate valve. The electric wires are connected to the motor on the barge in a rubber cable.

The gasoline line extends out from the bank, supported by three wooden "A" frames. A hose connects the permanent pipeline with the outlet line of the pump, and another hose connects the inlet pump line with the piping from storage tanks on the supplying barges.

Several pipes and wire lines anchor the barge with its pump house, yet still permit it to ride the water level. The hose provides a flexible connection with the terminus of the gasoline pipeline which leads to the bulk plant.

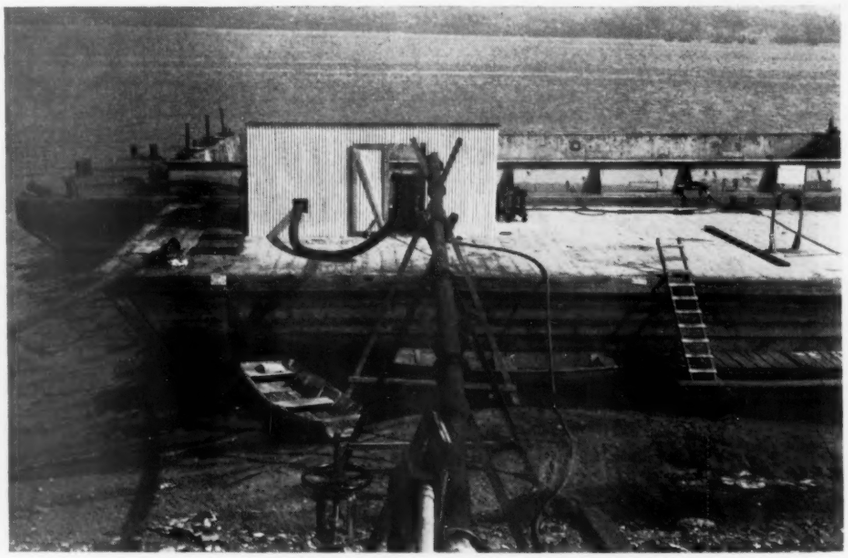
At low water level the pump barge can be reached by a ladder from the water line. But a rowboat is needed when the river is high.

Supply barges coming downriver anchor on the off-shore side of the pump barge. A 300,000 gallon load is pumped off in about eight hours.

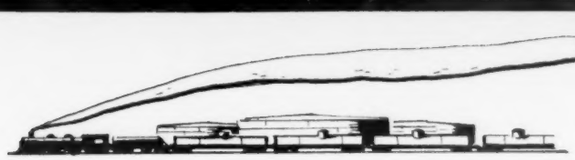
Gasoline storage is on a hillside at the back of the plant, consisting of one 420,000-gallon tank, another of 100,000 gallons capacity, and several smaller tanks totaling 60,000 gallons.

A new truck loading track was constructed to speed up filling of truck transports.

Globe Oil & Refining Co. has leased the terminal and barges gasoline downriver from its refinery at Lamont, Ill.



This pipeline, connected to the pump-house barge anchored offshore with a flexible hose, and running back 600 feet to storage tanks, converted the land bulk plant of Sweney Gasoline & Oil Co. at Peoria, Ill., into a "water terminal." Power for the 50-horsepower electric motor on the anchored barge is supplied from the land by a rubber cable



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'Vitamins' in the Oil Burner's Diet

Characteristics of Fuels Oils Explained

In ABC Language by Oil Company Engineer

While salesmen of the average oil jobbing company can discuss with the gasoline consumer the significance of octane ratings, distillation curve or the relative unimportance of gravity specifications in today's motor fuels, generally fuel oil salesmen cannot do so well in discussing properties of fuel oils.

In this article is information which the fuel oil distributor can place in the hands of his salesmen, giving them fundamentals of fuel oil specifications and their relative importance.

So rapid has been the growth of the market for domestic fuel oils in the past few years that many salesmen for distributors of fuel oils and burners have not had a chance to acquire complete information regarding the true significance of the different characteristics of domestic fuel oils operating in the different type burners.

While marked advancement has been made recently in this direction, "the tendency has been for information of a questionable, though well-intended, origin to crop up with no basis for its existence other than casual observations made in the field, which are sometimes very misleading," according to a paper* on fuel oil specifications prepared by William A. Sullivan of Shell Oil Co.'s oil burner testing laboratories at Sewaren, N. J.

Drawing an analogy of the human body and an oil burner, the paper states that a balanced diet is a necessity for the burner as much as it is for human beings. The answer to the question of the proper burner diet, Mr. Sullivan points out, requires knowledge of the mechanical structure of the burner concerned, as well as the chemical and physical structure of the fuel oil molecules and how they behave when set on fire.

The paper was based on the program of oil and burner research carried on by Shell in collaboration with various burner manufacturers under all service conditions which could be simulated in the laboratory.

Text of Sullivan's paper, discussing the various properties of fuel oils and their relative importance determined in these experiments, follows:

"Properties of the oil which we heretofore had considered of tremendous importance were found to occupy a relatively insignificant position in so far as their effect on oil burner operation was concerned, whereas other properties which we had overlooked entirely, up to the time this work was started, loomed up as major factors to control. It was also found that certain properties of the oil might have an important bearing on the performance of one type of burner, but have little or no influence when applied to another burner of a different type even though both types are approved by the Underwriters' Laboratories to handle the same Commercial Standard grade of oil. Thus it was concluded that each fuel oil specification should be considered in relation to the particular type of burner in which the oil is intended for use. Otherwise, it would have little or no meaning.

Carbon Residue

"For example, all types of vaporizing burners were found to be more or less sensitive to the carbon residue of an oil, thus making it necessary to specify a relatively low carbon residue content for oils intended for use in burners of this type, whereas, in considering this property of an oil in connection with atomizing burners, in general, it was found that a far greater latitude could be tolerated without any danger whatsoever of running into operating difficulties. The explanation for this difference in sensitivity to carbon residue between the two types of burners lies in the difference between the principles on which they operate.

"In the case of the vaporizing burner, in preparing the oil for combustion, it is converted into a vapor by bringing it in contact with some hot surface, after which the vapors are mixed with air for combustion. Thus, any residue resulting from the presence of foreign material in the oil or compounds which have a tendency to decompose on heating, will be deposited on or near the vaporizing surfaces of the burner, and if permitted to accumulate in large quantities, these deposits are quite apt to cause operating difficulties, such as, poor oil distribution, clogged oil inlets, shorted ignition electrodes, delayed ignition, etc., depending again on the particular design of the burner employing this principle of operation.

"In the atomizing burner, on the other hand, the oil is broken up into a fine mist or spray and each tiny particle is surrounded by air, so that any carbon or intermediate products formed during the process of combustion are usually burned up before they come in contact with any surface on which they might be deposited. Therefore, in this class of burners, oils containing high percentages of carbon residue may be burned completely, except for the inherent ash content, which is extremely small. This is assuming, of course, that the combustion chamber is large enough so that the flame is not inpinging on the brickwork and that proper atomization of the oil is taking place.

"And it should also be brought out in connection with vaporizing burners that distinction must be made between residual carbon which forms due to the high carbon residue content of the oil and the carbon and soot which forms as a result of poor combustion due to improper mixing of air with the oil vapors. Unless this distinction is recognized between the two types of deposits, you may in some cases be blaming the oil for a condition it has absolutely nothing to do with, and in dealing with complaints it is of utmost importance to place the blame where it belongs.

Viscosity

"But carbon residue is only one of the many properties of the oil that have to be considered in connection with a balanced oil burner diet. Viscosity is another characteristic of the oil which bears an important relationship to oil burner performance, and

*Delivered before Fuel Oil Distributors' Ass'n of New Jersey, April 14, 1939, at Asbury Park, N. J.

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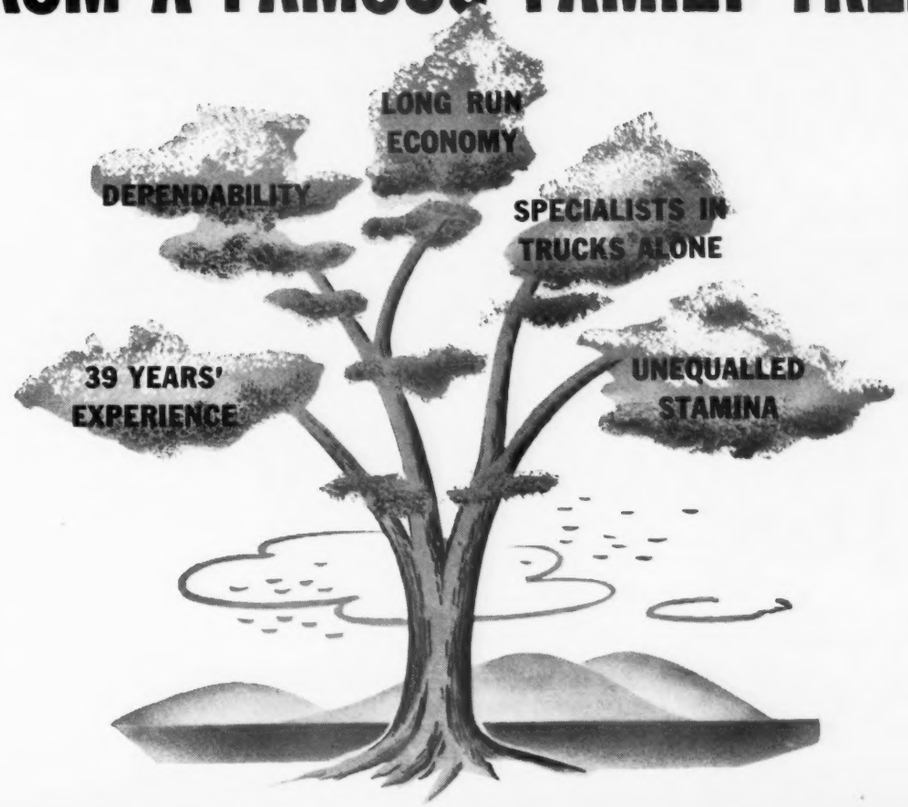

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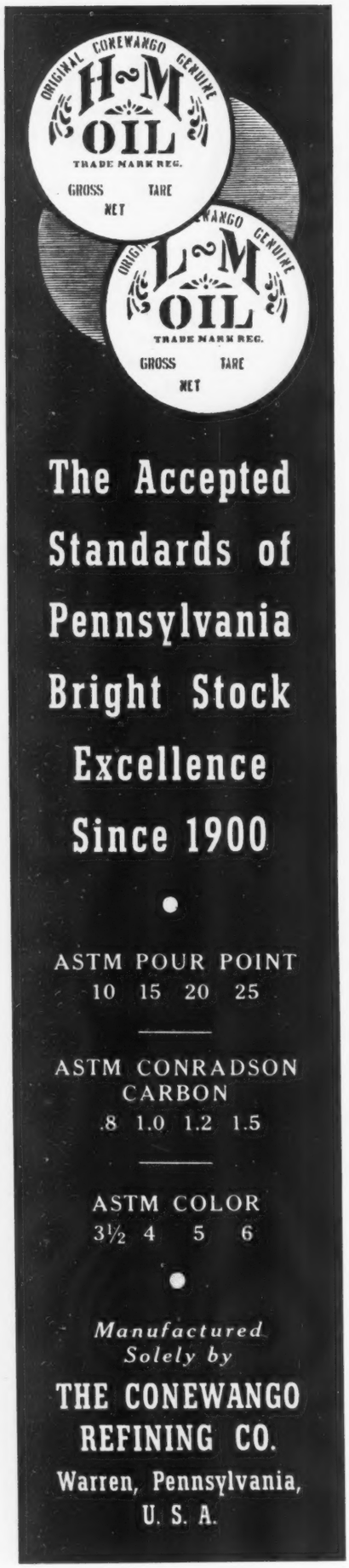


while carbon residue, as we have seen, is of special significance when considering vaporizing burners, viscosity is of greatest importance with respect to its effect on the performance of atomizing burners. The conventional, pressure atomizing, domestic burners were found to be particularly sensitive to viscosity changes in several different ways.

"In the first place, the small atomizing nozzles with which these burners are equipped are designed to handle, that is, atomize properly, only low viscosity oils, oils having viscosities in the neighborhood of 50 seconds and under, Saybolt Universal at 100 degrees Fahr. As the viscosity of the oil is increased beyond this point, the results of our tests carried out on a huge assortment of domestic burner nozzles showed in general that it becomes increasingly difficult to obtain fine atomization which is absolutely necessary for good combustion in small gun-type burners, where you are definitely limited as to both time and space available for complete combustion to occur. Thus it may be said that poor atomization brought about by the use of oils too high in viscosity will invariably result in poor combustion in various ways such as stringy, sparky, or dirty fires; flame instability causing boiler pulsations; lop-sided fire; carbon deposits on the brickwork; bad odor, etc.

"In the second place, the viscosity of the oil used was found to have a direct bearing on the oil output of pressure atomizing burner nozzles. And contrary to popular conception, an increase in viscosity was found to cause an increase in the nozzle output, the reverse being true when the viscosity of the oil was lowered. For example, the output of the ordinary pressure atomizing under 100 pounds oil pressure was found to run from 25 to 30 per cent greater on a so-called No. 4 fuel oil having a viscosity of 50 seconds than it did on kerosine with a viscosity of about 30 seconds, and in general this same relationship held true all the way up the line until a point was reached at which the viscosity of the oil became too high for the nozzle to atomize it properly.

"In order to understand this rather paradoxical effect that the viscosity of the oil has on the nozzle output, one must be familiar with the design of the nozzle itself and the principle on which it operates. In the conventional pressure atomizing nozzle designed to operate at relatively low oil rates, oil is fed under pressure into the vortex swirl chamber, in the tip of the nozzle, through small slots cut across the beveled seat of the nozzle disc. These slots are set at a tangent to the walls of the vortex chamber, thus causing the incoming oil to swirl inside the chamber, and the back pressure or frictional resistance which is built up due to the turbulence of the swirling oil, has a braking action on the oil and thus tends to reduce its forward motion through the nozzle orifice. The faster the oil swirls the more pronounced this braking action becomes, therefore, it follows that since the low viscosity oils tend to swirl faster than the higher viscosity oils, they tend to set up greater frictional resistance inside the nozzle than the latter, which accounts for the lower nozzle output on the lighter oils, under the same pressure.

"The practical significance of this from the standpoint of oil burner performance can be readily appreciated, when one stops to consider that any variation in the oil rate will tend to disturb the proportions of air and oil which must be maintained for efficient combustion. In other words, if your fan and draft adjustments are made at the beginning of the heating season for a specific burning rate, each time the oil rate changes thereafter, corresponding changes in the air adjustments of the burner should be made in order to maintain peak efficiency. Hence, the importance of supplying pressure atomizing burners with oils of uniform viscosity characteristics is apparent.

"In carrying out this work on atomizing nozzles it was also observed that wide variations in the viscosity of the oil used had a tendency to produce objectionable changes in the angle of the oil spray. Some nozzles were found to be far more critical than others in this respect, depending on their design. For example, in testing nozzles produced by one manufacturer the spray angles were found to drop off one or two degrees for every two or three seconds increase in the viscosity of oil being used, and to collapse completely on oils higher than 40 seconds in viscosity, while other nozzles, produced by a different manufacturer, would retain a constant spray angle on oils ranging from 34 to 50 seconds in viscosity, and a complete breakdown of the spray did not occur until the viscosity of the oil reached 92 seconds.

"Since in actual service the ignition electrodes are usually set for the spray angle marked on the nozzle, a drastic reduction from this resulting from the use of an oil too high in viscosity, might cause delayed ignition or a complete ignition failure.

Flash Point

"Another property of fuel oil which was investigated as to its effect on domestic burner operation was the flash point, and despite the fact that this property of the oil is so often taken as an indication of ignition quality, our findings showed that it had no practical bearing on the ease with which an oil could be ignited. Oils having flash points of 200 degrees Fahr. and higher were found to ignite just as quickly as those with flash points of from 100 degrees to 110 degrees Fahr.

"So this is one property of the oil we can forget about in setting up our specifications for a balanced oil

burner diet as long as it conforms to the minimum requirements stipulated by many states as a safeguard against fire hazards in storing and handling the oil.

Volatility

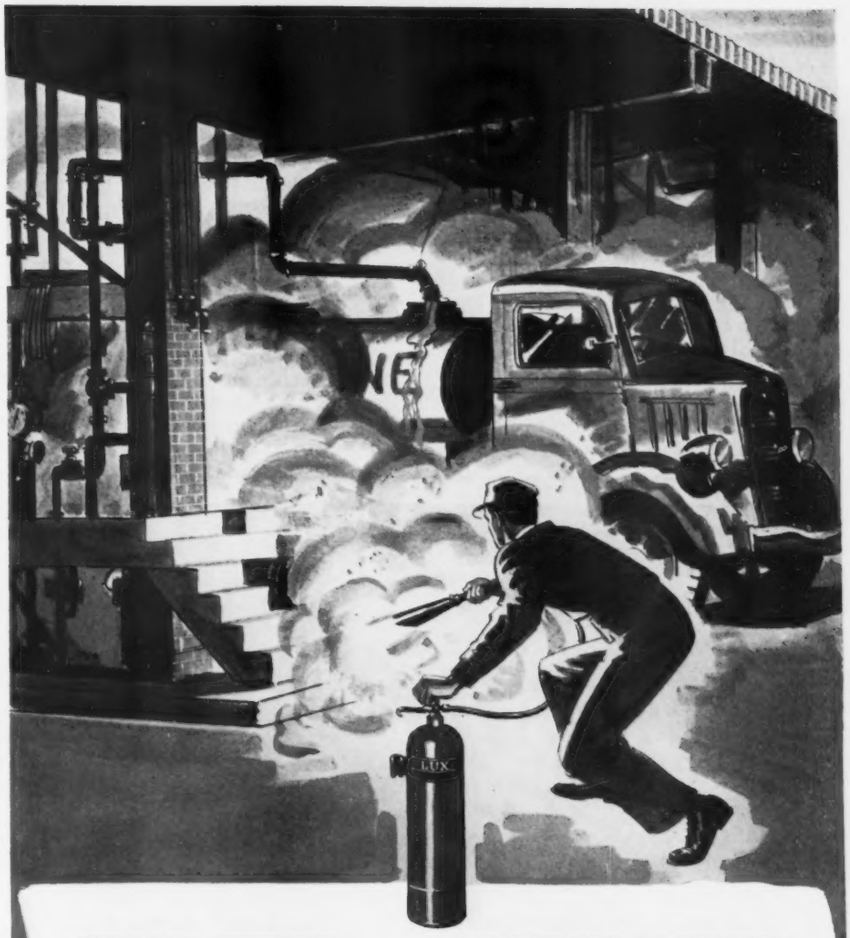
"The volatility of the oil or its distillation range was found to be of far greater significance in judging the ignition characteristics of the oil than the flashpoint. In vaporizing burners it was found especially desirable to use an oil having a properly balanced distillation curve. That is, the light, intermediate, and heavy fractions of the oil should be in just the right proportions to provide all the necessary elements for satisfactory lighting. There should be a sufficiently high percentage of light volatile fractions in the oil to vaporize and burn at the relatively low starting temperatures, and thus liberate enough heat to bring the temperature of the vaporizing surfaces of the burner up to a point at which the next heavier fractions will also be vaporized before an excessive amount of the heavy ends of the oil can accumulate in the burner.

"Quite frequently complaints of excessive carbon formation, the burner shutting down on the safety control, strong odor of oil vapors inside the house and outdoors, may be traced to the low volatility of the oil being used. Thus a well balanced distillation curve should be included as one of the requirements for a well balanced domestic oil burner diet, especially for vaporizing burners.

"In atomizing burners where a warming-up period is not required to establish normal operation, the volatility of the oil is relatively unimportant.

End Point

"In considering the distillation range of fuel oil, the question logically arises as to what influence the distillation end point of the oil has on oil burner performance. A few years ago the end point of a fuel oil was considered the most reliable indications of its carbon forming tendencies, but that was before the 10 per cent bottoms carbon residue test was developed for testing light fuel oils. Now we know, in view of the results of the work which we have carried out in this connection, that the end point of an oil in itself has little to do with the amount of carbon that the oil leaves in vaporizing burners. It is true that high end point oils in general are apt to be higher in carbon residue than low end point oils, but it does not necessarily follow that all high end point oils are high in carbon residue nor that all low end point oils are low in carbon residue. If the oil has received the proper treatment at the refinery designed to reduce its carbon forming tendencies, variations of 100 degrees Fahr. or more in its end point will make no appreciable dif-



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ference in the amount of carbon it leaves upon burning.

"Not knowing this, however, many fuel oil distributors will make the mistake of buying their oil on the basis of its end point, ignoring the carbon residue altogether, so that actually they may get a low end point oil high in carbon residue with far more objectionable carbon forming tendencies than a high end point oil low in carbon residue. It is also well to remember in this connection that a drastic reduction in the end point of the oil will also reduce its heat value.

Gravity

"Gravity is another property which for many years was incorrectly used as the criterion of an oil's suitability for use in various types of oil burners, but today it is generally recognized that the gravity of a fuel oil has no direct bearing on its performance characteristics. However, this is a good example of how misconceptions, with no factual basis for their existence, can become so widespread that they are finally accepted as truths.

Sulphur

"Sulphur is another characteristic of fuel oil which should be considered in its true relationship to oil burner performance rather than in the light of the abstract conception that so many people have of it. Sulphur is too often used synonymously with corrosion, when actually its presence in fuel oil may or may not have anything to do with its corrosive action on oil burner parts.

"It is true, however, that certain forms of sulphur are corrosive and should by all means, be removed from the oil by proper treatment at the refinery, but there are many other sulphur compounds which are absolutely harmless from the standpoint of corrosion, and at the same time possess definite heat value. So there would be no point in going to a lot of unnecessary expense in removing the latter compounds from the oil, especially since any extra expense of this nature tends to increase the cost of the finished product to the consumer.

"You have probably heard it said that when sulphur in the oil burns, sulphurous acid is formed which corrodes metal surfaces of the furnace or stack, but this is not true unless the water formed as a product of combustion is condensing on these surfaces, in which case corrosion would occur from the moisture alone. However, the possibility of condensation occurring in the average domestic installation under normal operation is very remote, and as long as the flue gases are dry they can do absolutely no harm to the metal surfaces with which they come in contact.

Heat Value

"No diet intended for human consumption would be considered complete without the inclusion of calorific value, and by the same token our diet for domestic oil burners would be pretty flat if we neglected to include in it as one of the essentials heat value, as measured by B.t.u.'s. Moreover, if the heat value of fuel oils varied as widely as the calorific value of various foods does, this would be a most important property of the oil for us to control, but fortunately the difference in this respect between one grade of domestic fuel oil and another is so slight that it can hardly be detected in actual service over an entire heating season.

"Some people have the impression that there is a decided saving to be gained by using No. 3 fuel oil, for example, over the use of No. 2, but maximum difference between these two grades of fuel is not apt to be over 2000 B.t.u. per gallon, which on a percentage basis is less than 1½ per cent. And then if you stop to consider that the overall boiler-burner efficiency of the average domestic installation is seldom over 65 per cent, your theoretical saving resulting from the use of the heavier grade of oil amounts to about 1 per cent, but in actual service it is very doubtful that you would be able to detect any saving at all. Because in the long run the superior burning qualities of the No. 2 fuel will generally more than make up for any deficiency in its heat value as compared to No. 3. The reason for this is that the heavier fuels

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in domestic burners generally have a greater tendency to smoke than do the lighter fuels under the same operating conditions, thus making it more difficult to obtain high combustion efficiency (that is, high CO_2 without smoke) when using the former.

Tendency to Smoke

"This brings up another property of the fuel that is especially significant in view of the recent F.H.A. requirements for a minimum CO_2 reading of 10 per cent of the flue gases on all new oil burner installations financed by this government organization. Some oils have a much more pronounced tendency to smoke than others, depending on the chemical nature of their constituent hydrocarbon compounds. Therefore, buyers of oil should not be misled into overlooking this property of the oil by staggering offers of high heat value.

"All of which, in the final analysis, goes to emphasize the point brought out in the beginning that the sooner all parties concerned become acquainted with the necessary elements which go to make up a balanced diet for domestic oil burners, and discard old worn out theories, the better off everybody will be."

New Terminals Planned For Pacific Northwest

N. P. N. News Bureau

LOS ANGELES, May 27.—Terminal facilities are being constructed at Umatilla, Oreg., on the banks of the Columbia river approximately 200 miles upstream from Portland, to handle barge shipments of gasoline which will be moved from this point by truck or rail into inland areas of Oregon, Washington and into western Idaho.

Four California oil companies, Standard, Union, Richfield and Texaco, have started construction of facilities at Umatilla and first barge deliveries are scheduled for some time in June. Arrangements will provide for a jointly owned dock for unloading into individual company storage.

Although varying somewhat with the company, this tankage is expected to average about 20,000 barrels for each shipper, with one tank of about 15,000 barrels for the standard grade and smaller containers for premium and third-grade products.

Barge shipments have previously been made to The Dalles, Oreg., about 90 miles above Portland, but the Umatilla location will place bulk distribution within 100 miles of the important Spokane marketing area. Barging facilities are offered by Inland Navigation Co. and Tide Water Transportation Co.

The latter is operated by Kirk Thompson, Spokane distributor for General Petroleum Corp. and by Mark Leh, formerly sales manager for General Petroleum Corp. General has been receiving barge deliveries from Portland via this line to Attalia, Wash. for the past two years. Attalia is approximately 30 miles nearer Spokane than Umatilla, but deliveries to the latter point escape the difficult Attalia rapids.

It is expected the combination barge and truck or rail rate from Portland to Spokane via Umatilla will be in the neighborhood of 25 cents per 100 pounds. The rate from Portland through Attalia is understood to be 24.5 cents, which includes a 17-cent rate established by the Washington state public utilities commission for truck hauls from this port to Spokane.

It was to meet this combination rate and to ward off construction of a marine terminal at Umatilla, or further development at Attalia, that the rails initiated a through rate of 25 cents per hundredweight from Seattle or Portland to Spokane. Existing through truck and rail rate between these points is 40 cents.

The proposed rail reduction was ordered suspended in Interstate Commerce Commission I & S Docket 4614, pending further study.

Hearings on this investigation, also scheduled to include I.C.C. Docket 4623, which has to do with the Montana rate case, are scheduled to be held soon before an ICC examiner with commissioners from Washington, Oregon, Idaho and Montana sitting in joint session.

Observers believe it is doubtful that the through rate from the coast to Spokane, as determined by this investigation, will permit rails or trucks to meet the combination rates.

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"Dag" colloidal graphite is chemically inert, non-gumming, odorless and non-oxidizing—it is economical and offers an ideal solution to high temperature lubrication problems in glass making and ceramic machines, for conveyors and baking ovens, for projectors, die casting and permanent mold equipment, etc.

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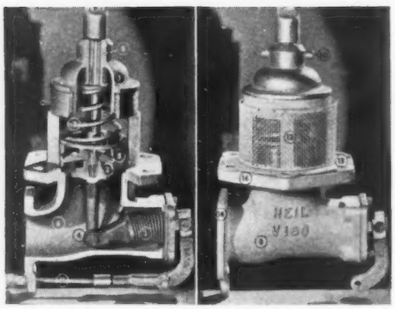

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ISSUES

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Truck Drivers' Status Under Wage-Hour Law Clouded

N. P. N. News Bureau

WASHINGTON—The "twilight zone" between jurisdiction of the Interstate Commerce Commission and the Labor Department's wage-hour division over hours of trucking employes "in interstate commerce" hasn't been brightened any by the ICC's recent decision that the Commission has authority over the hours of services employes whose activities "affect" safety.

In fact, it might be called a bit foggier, particularly as the situation affects private trucks—and in this category is included trucks operated by oil companies in transportation of their own products.

In the first place, ICC hasn't yet determined whether there is a "need" for safety regulations for private trucks. Yet, in its decision of last week in *Ex Parte* MC-28 it held that it has jurisdiction over drivers of these trucks, as to hours of service.

This decision may be taken as a tip-off on the Examiner's recommendation, expected shortly, in *Ex Parte* MC-3—the inquiry into the "need" for ICC regulation of private truck operators as regards safety.

To understand this situation thoroughly it is necessary to review, briefly, both the Motor Carrier Act, 1935, and the Wage-Hour law.

Under the Motor Carrier law, ICC is authorized "to establish for private carriers of property by motor vehicle, if the need therefor is found, reasonable requirements to promote safety of operation, and to that end prescribe qualifications and maximum hours of service of employes . . ." The same law also empowers ICC to fix such standards for employes of common and contract truckers, but doesn't require an investigation into the "need"—they are assumed to be necessary.

The Wage-Hour law asserts that the work-week provisions of that its provisions shall not apply with "respect to . . . any employe with respect to whom the Interstate Commerce Commission has power to establish qualifications and maximum hours of service" under the Motor Carrier Act.

In *Ex Parte* MC-28 (ruling on which has just been handed down—See N.P.N., May 17, p. 16) ICC sought to determine just what employes of all types of truckers it could exert hours-of-service jurisdiction over. It had already fixed a maximum work-week of 60 hours for employes of common and contract (for-hire) truckers, whose activities "affected" safety of operation.

The Commission had also initiated the investigation into the "need" for such regulaton of private truckers' employes, but no decision has come down.

Last November the Wage-Hour Division said it would withhold a ruling as to its jurisdiction over hours-of-service of trucking employes until after ICC had made its decision on the Commission's jurisdiction (N.P.N., Nov. 2, p. 8). A long wait ensued. But in March this year (N.P.N. March 29, p. 32) Wage-Hour officials, apparently tired of waiting on ICC, held that the Wage-Hour Division was the body to decide on the hours of truck employes other than drivers. The Wage-Hour law provides a 44-hour maximum work week for the present, gradually diminishing to 40-hours.

It was hoped that ICC's decision in *Ex Parte* MC-28, handed down recently, would be specific as to just what trucking employes are engaged in activities promoting or affecting safety of operation. It didn't. It said that drivers only were subject to the 60-hour work-week of the ICC, and added:

"It may well be that the activities of some employes other than drivers likewise affect the safety of operation of motor vehicles engaged in interstate and foreign commerce. If common and contract carriers, or private carriers of property, or their employes, believe that the activities of employes other than drivers affect the safety of operation of motor vehicles engaged in interstate and foreign commerce, they may file an appropriate petition (with ICC) asking that a hearing be held and the question determined."

Which leaves the question of "who is subject to ICC and who to Wage-Hour Division" about where it was before. Wage-Hour Division has indicated it will recede to ICC rulings, should the latter, through such proceedings, as outlined above, enlarge the scope of its jurisdiction.

The only inference to be gathered from the decision is that the ICC already feels it has jurisdiction over employes of private truckers, and will inaugurate the same sort of safety regulations for them as it has for "for-hire" truckers as soon as it proves the "need."

In any event, it appears now that drivers of "for-hire" trucks engaged in interstate commerce may legally work 60 hours a week, but that other employes of the same concerns may legally work only 44 hours per week. And, since the "need" investigation is not yet completed, it would seem from the Wage-Hour ruling of last March that employes of private truckers (including oil companies, as pointed out above) may legally work only 44 hours a week, *if such employers are subject to the wage-hour law.* And this would appear to drivers, until such time as ICC asserts its authority over them through its "need" investigation.

However, it is understood that the

American Trucking Assns., Inc., has under preparation a petition to the courts seeking more clearly to delineate the line of demarcation between the ICC and the Wage-Hour Division. It has not been determined how this will be filed.

Getting back to the Wage-Hour Division and its 44-hour week. Just how it will assume jurisdiction over all employes of for-hire motor carriers who are not actually drivers, and over *all* employes of private carriers (until the "need" for ICC regulation can be established and the ICC assumes jurisdiction) is not known. It may be that this is where ATA's brief will come in.

Suppose, for instance, that the X Transport Company feels that mechanics who keep the trucks in good operating condition are subject to the ICC's 60-hour week rather than Wage-Hour's 44-hour week, because their activities affect safety of operation. They are ordered to work 60 hours per week.

This is brought to the attention of the Wage-Hour Division (in our hypothetical case), which holds that they are subject to the Wage-Hour law. To determine the extent of their activities as they affect safety of operation, a suit will have to be filed, and the courts will delineate what ICC has not—the scope of the Motor Carrier Act as opposed to the Wage-Hour law.

Of course it may be that the door left open by ICC in its order, which permits petitions to be filed with it to further determine what employes affect safety of operation, may provide the necessary delineation, but the wheels of the ICC grind slowly.

W. J. Parker Resigns From Battery Association

NEW YORK. — W. J. Parker, after 12 years as commissioner of the National Battery Manufacturers Assn., Inc. here, will resign June 1 to devote his time to organizing and managing of national trade associations, which will be carried on through W. J. Parker, Inc., 7 East 44th St., New York.

Heating Guide Published

NEW YORK. — A revised and enlarged edition of the Heating, Ventilating, Air Conditioning Guide, has just been published for 1939 by the American Society of Heating and Ventilating Engineers, 51 Madison Ave., New York. The book contains a chapter on heat and fuel utilization, including charts for estimating oil and gas burning rates. The guide is priced at $5.

Much of the credit for the development of porcelain enamel as a building material must go to the oil industry, C. S. Pearce, of Chicago, managing director of the Porcelain Enamel Institute, said in commenting on the increase in shipments of this material during March of this year. Leaders in the oil industry "were among the very first to recognize it," he added.

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Markets

Mid-Continent

TULSA, May 29.—Gasoline quotations in the Mid-Continent generally were firm with supplies closely held by refiners, according to reports of traders last week. This was attributed by some traders to good jobber demand against contracts, active inter-refinery buying both for immediate and future delivery, and improved retail prices in some parts of the middle west.

Highlighting last week's inter-refinery activity was a 900-car purchase of 60-62, 400 e.p. and "Q" gasolines by one independent refiner from another independent for shipment over the next four months. Price paid was not divulged. An Oklahoma refiner said he was in the market for 100 cars of 67-69 octane gasoline for immediate delivery. Another refiner said he had purchased 75 cars of various grades of gasoline earlier this month. Few open spot sales were reported but deliveries against contracts were heavy, refiners said.

Reduced prices for kerosine were reported by several Oklahoma refiners. Prices for other products were unchanged, reports indicated.

Pennsylvania

CLEVELAND, May 29.—Wax prices advanced again in western Pennsylvania the past week with quotations reported for 124-126 A.m.p. white crude scale reaching 3 cents a pound, New York. Prices for other products were unchanged, refiners said.

Quotations reported for "Q" gasoline in the lower field remained at 6.25 cents although some refiners said they were meeting competition considerably below this figure in some instances. Similar reports were heard regarding U. S. Motor gasoline for which quotations reported from the lower field remained at 4.5 cents low.

Refiners said movement of lubricating oils against contracts was up to seasonal expectations.

California

LOS ANGELES, May 27.—Only inquiry of interest reported in California offshore markets the past week was from a South American country, seeking quotations on 100,000 gallons of above 65 octane gasoline a month, for a year, to be shipped in drums. No spot sales were reported and quotations remained unchanged, traders said.

Sales of natural gasoline in the Los Angeles Basin at 6 cents for a 21-pound product were reported as local producers met San Joaquin Valley competition in this market. Generally, prices reported ranged upward from 6.25 cents.

Gas oil was said to be available at independent Los Angeles plants as low as 80 cents a barrel, with few takers. Kerosine-distillate was in not much better demand at prices of 90 cents to $1.00, reports indicated.

Independent refinery quotations reported for competitive-grade gasolines were generally 7.5 cents at the rack, although some spot sales were said to have been made at 7.25 cents early in the week.

Gulf

NEW YORK, May 29.—Reports were current in the trade here the past week that approximately seven cargoes of gasoline, leaded and unleaded, had been sold at the Gulf for coastwise shipment in June. Further details regarding the transactions were not available. No changes were reported in gasoline quotations throughout the week.

Reports indicated continued scarcity of Grade C bunker oil. One refiner said he had been forced to borrow a considerable quantity to meet his regular commitments.

Mid-Western

CHICAGO, May 29.—Chicago tank car marketers and refiners reported open spot sales of 27 cars of gasoline last week, most of which were 70-72 octane. Prices generally were unchanged, reports indicated. Supplies of all grades of gasoline were said to be closely held by refiners. Some resellers said jobber demand for shipments against contracts was unusually active in anticipation of holiday motoring.

A marketer reported selling one car of 41-43 w.w. kerosine at 3.5 cents. No other open spot kerosine sales were reported and prices for the most part were unchanged, traders said.

N. P. N. Gasoline Index

	Dealer T.w.	Tank Car
	Cents per Gal.	
May 29.....	9.52	5.66
Month ago.....	9.38	5.58
Year ago	10.16	5.86

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 12 wholesale markets for regular-grade gasoline.

Eastern

NEW YORK, May 29.—Eastern seaboard gasoline prices generally remained unchanged in the week ended May 27, according to reports of traders here. One refiner late in the week announced an advance of 0.25 cent to 6.25 cents in his prices for above 65 octane at Savannah and Jacksonville, effective May 29. No changes were reported in quotations at other points. Movement of gasoline, almost entirely against contracts, was fairly heavy for the season, traders said.

Wax

NEW YORK, May 29.—Higher prices were reported for crude scale wax at New York and New Orleans the past week, with most refiners quoting 3 cents for white and yellow grades. Fully refined prices remained unchanged, suppliers said. Scale grades continued scarce, it was said.

Fuel Oil

CHICAGO, May 29.—Domestic burner fuels were featureless in the Mid-Western market the past week. A number of refiners said they were endeavoring to build up their stocks for next fall. A tank car marketer reported selling one car of No. 1 p.w. distillate at 3.25 cents. No other open spot sales, and no changes in quotations, were reported during the week.

Active consumer demand for Nos. 5 and 6 fuels has resulted in appreciably lower inventories of these oils, some resellers said.

* * *

TULSA, May 29.—Aside from lower prices for Oklahoma U.G.I. gas oil and No. 2 dark fuel oil, light fuel oil prices generally were reported unchanged in the Mid-Continent the past week. One refiner reported reducing his quotation for U.G.I. gas oil 0.375 to 3 cents. Quotations reported for No. 2 dark fuel were 0.125 cent lower at 3 to 3.25 cents. No open spot sales were reported during the week.

* * *

NEW YORK, May 29.—Little change was reported in fuel oil prices along the eastern seaboard in the week ended May 27. Suppliers said demand for heating oils was at low ebb while movement of the heavier industrial fuels was fairly steady. No. 6 oil continued scarce, reports indicated.

CHICAGO, May 26.—Standard Oil Co. of Indiana today announced that effective June 1 it will advance its tank wagon prices for No. 6 and Bunker C fuel oils 0.25-cent per gallon throughout the metropolitan Chicago area.

The company stated that "a material increase in the wholesale cost of these grades of oil makes this advance necessary."

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days) unless otherwise stated. Prices in cents per gallon, except heavy fuel oils in dollars per barrel of 42 gallons, wax and petrolatums in cents per pound in barrels, tank car lots, FOB refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Gasoline

Prices Effective	May 29	May 22
OKLAHOMA		
U. S. Motor: (Octane L-3)		
62 oct. & below	4.125– 4.375	4.125– 4.375
63-66 oct.	4.375– 4.625	4.375– 4.625
67-69 oct.	4.625– 4.875	4.625– 4.875
70-72 oct.	4.875– 5.125	4.875– 5.125
60-62, 400 e.p.	(h) 4.125–4.25	(h) 4.125–4.25
WESTERN PENNA. REFINERY QUOTATIONS		
Bradford-Warren:		
Motor gasoline:		
U. S. Motor:		
Min. 65 oct.	(h) 6.25 –6.75	(h) 6.25 –6.75
Min. 70 oct.	(e)6.50	(e)6.50
"Q" gasoline	(h) 6.25 –6.75	(h) 6.25 –6.75
Other districts:		
Motor gasoline:		
U. S. Motor (58-62° gravity):	4.50 – 5.00	4.50 – 5.00
"Q" gasoline	6.25 – 6.50	6.25 – 6.50
CENTRAL MICHIGAN (a)		
Str.-Run Gasoline	4.50 – 4.625	4.50 – 4.75
U. S. Motor: (Octane L-3)		
67-69 octane	(e)6.50	(e)6.50
70-72 octane	7.25	7.25

Prices Effective	May 29	May 22
CALIFORNIA (3c tax to be added if used in state)		
U. S. Motor:		
54-58 gravity, for in-state shipment	7.25 – 9.25	7.25 – 9.25
54-58 gravity, for out-side state shipment	7.25 – 9.00	7.25 – 9.00
58-61 gravity, 375-400 e.p., 65 oct. & above	8.00 – 9.75	8.00 – 9.75
N. TEX. (b)		
U. S. Motor: (Octane L-3)		
62 oct. & below	4.125– 4.375	4.125– 4.375
63-66 oct.	4.50 – 4.875	4.50 – 4.875
67-69 oct.	4.625– 4.875	4.625– 4.875
70-72 oct.	4.875– 5.25	4.875– 5.25
60-62, 400 e.p.	(h)4.125	(h)4.125
KANSAS (For Kansas destinations only)		
U. S. Motor: (Octane L-3)		
62 oct. & below	4.375– 5.00	4.375– 5.00
67-69 octane	4.75 – 5.50	4.625– 5.50
70-72 octane	5.125– 5.875	5.125– 5.875
W. TEX. (b)		
U. S. Motor: (Octane L-3)		
62 oct. & below	(h) 4.00 –4.375	(h) 4.00 –4.375
63-66 oct.	(e) 4.625–4.75	(e) 4.625–4.75
67-69 oct.	(h) 4.75 –5.00	(h) 4.75 –5.00
70-72 oct.	(h) 5.00 –5.50	(h) 5.00 –5.50

Prices Effective	May 29	May 22
CENTRAL WEST TEXAS (Prices to truck transports)		
U. S. Motor Gasoline: (Octane L-3)		
62 oct. & below	(h) 4.125	(e) 4.125
63-66 octane	(e) 4.75	(e) 4.75
66-70 octane	(e) 5.00	(i)
E. TEX.		
U. S. Motor Gasoline, (Octane L-3)		
70-72 oct.	(h) 4.50 –4.75	(h) 4.50 –4.75
60-62, 400 e.p.	(h) 4.25	(h) 4.25
N. LA. (For shipment to La. & Ark.)		
U. S. Motor: (Octane L-3)		
62 oct. & below	(h) 4.125–4.375	(h) 4.125–4.375
63-66 oct.	(e) 4.375–4.625	(e) 4.375–4.625
67-69 oct.	(e) 4.625–4.875	(e) 4.625–4.875
70-72 oct.	(e) 4.875–5.375	(e) 4.875–5.375
ARKANSAS (F.o.b. Ark. plant of one refiner, for shipment to Ark. & La.)		
U. S. Motor: (Octane L-3)		
62 octane & below	4.50	4.375
67-69 oct.	4.875	4.875
OHIO (S. O. Ohio quotations for statewide delivery and subject to exceptions for local price disturbances)		
70-72 octane	7.375	7.375

(*Continued on next page*)

(a) Prices FOB. Central Michigan refinery group basis, for shipment within Mich. Shipments may originate at plants outside Central group. (b) For shipment to Texas and New Mexico destinations; Group 3 prices quoted for northern shipment. (c) Excluding Detroit shipment. (e) One refiner quoting. (f) Two suppliers quoting. (g) To resellers holding licenses. (h) Two refiners quoting. (i) No quotations reported. (j) Prices discontinued.

MID-WESTERN TANK CAR MARKET

Prices in this Midwestern Tank Car Market table are gathered from refiners and tank car marketers or brokers from their offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight rate basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Generally when prices are quoted in this Chicago market, the origin of the material is not known at the time the quotation is given, oftentimes even with the quoting refiners who have refineries in more than one refining district. All other gasoline prices are given by and for the particular refining district where the material is made and from which it is shipped.

Gasoline

Prices Effective	May 29	May 22
U. S. Motor: (Octane L-3)		
62 oct. and below	3.875– 4.375	3.875– 4.375
63-66 oct.	4.125– 4.50	4.125– 4.50
67-69 oct.	4.25 – 4.75	4.25 – 4.75
70-72 oct.	4.50 – 5.125	4.50 – 5.125

Kerosine

41-43 gravity, w.w.	3.50 – 4.125	3.50 – 4.125
42-44 gravity, w.w.	3.625– 4.375	3.625– 4.375

Fuel and Gas Oils

Prices Effective	May 29	May 22
No. 1 p.w.	3.25 – 3.875	3.25 – 3.875
No. 1 straw	3.25 – 3.50	3.25 – 3.50
No. 2 straw	3.125– 3.50	3.125– 3.50
No. 3	2.875– 3.125	2.875– 3.125
No. 5	$0.575–$0.70	$0.575–$0.70

Prices Effective	May 29	May 22
No. 6	$0.35 –$0.45	$0.35 –$0.45
U. G. I. gas oil	2.625– 3.00	2.625– 3.00
Range oil	3.25 – 4.00	3.375– 4.00

Naphtha and Solvent

Stoddard solvent	5.875	5.875
Cleaners' naphtha	6.375	6.375
V. M. & P. naphtha	6.375	6.375
Mineral spirits	5.375	5.375
Rubber solvent	6.375	6.375
Lacquer diluent	7.375	7.375

Daily range of gasoline prices as reported in PLATT'S OILGRAM (Week Ended May 26, 1939)

	May 22	May 23	May 24	May 25	May 26
U. S. Motor, (Octane Number determined according to L-3 Method in Okla., Texas and Mid-Western Districts):					
62 octane and below:					
Oklahoma	4.125– 4.375	4.125– 4.375	4.125– 4.375	4.125– 4.375	4.125– 4.375
(a) North Texas	4.125– 4.375	4.125– 4.375	4.125– 4.375	4.125– 4.375	4.125– 4.375
West Texas	(d) 4.00 –4.375	(d) 4.00 –4.375	(d) 4.00 –4.375	(d) 4.00 –4.375	(d) 4.00 –4.375
Mid-Western (Group 3 basis)	3.875– 4.375	3.875– 4.375	4.00– 4.375	3.875– 4.375	3.875– 4.375
63-66 octane:					
Oklahoma	4.375– 4.625	4.375– 4.625	4.375– 4.625	4.375– 4.625	4.375– 4.625
(a) North Texas	4.50 – 4.875	4.50 – 4.875	4.50 – 4.875	4.50 – 4.875	4.50 – 4.875
West Texas	(b) 4.625–4.75	(b) 4.625–4.75	(b)4.625– 4.75	(b) 4.625–4.75	(b)4.625– 4.75
Mid-Western (Group 3 basis)	4.125– 4.50	4.125– 4.50	4.125– 4.50	4.125– 4.50	4.125– 4.50
67-69 octane:					
Oklahoma	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.625– 4.875
(a) North Texas	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.625– 4.875	4.625– 4.875
West Texas	(d) 4.75 –5.00	(d) 4.75 –5.00	(d)4.75 –5.00	(d) 4.75 –5.00	(d) 4.75 –5.00
Mid-Western (Group 3 basis)	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75
70-72 octane:					
Oklahoma	4.875– 5.125	4.875– 5.125	4.875– 5.125	4.875– 5.125	4.875– 5.125
(a) North Texas	4.875– 5.25	4.875– 5.25	4.875– 5.25	4.875– 5.25	4.875– 5.25
West Texas	(d) 5.00 –5.50	(d) 5.00 –5.50	(d) 5.00 –5.50	(d) 5.00 –5.50	(d) 5.00 –5.50
East Texas	(d) 4.50 –4.75	(d) 4.50 –4.75	(d) 4.50 –4.75	(d) 4.50 –4.75	(d) 4.50 –4.75
Mid-Western (Group 3 basis)	4.50 – 5.125	4.50 – 5.125	4.50 – 5.125	4.50 – 5.125	4.50 – 5.125
Motor Gasoline, 60-64 octane:					
New York harbor	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Philadelphia district	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Baltimore district	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Motor Gasoline, 65 octane & above:					
New York harbor	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25	6.00 – 6.25
Philadelphia district	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50	6.00 – 6.50
Baltimore district	6.00 – 7.00	6.00 – 7.00	6.00 – 7.00	6.00 – 7.00	6.00 – 7.00
U. S. Motor, 58-62°:					
Other districts (Western Penna.)	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00	4.50 – 5.00
Motor Gasoline, Min. 65 octane:					
Bradford-Warren (Western Penna.)	(d) 6.25 –6.75	(d) 6.25 –6.75	(d) 6.25 –6.75	(d) 6.25 –6.75	(d) 6.25 –6.75
Motor Gasoline, Min. 70 octane:					
Bradford-Warren (Western Penna.)	(b)6.50	(b)6.50	(b)6.50	(b)6.50	(b)6.50
"Q" Gasoline:					
Bradford-Warren (Western Penna.)	(d) 6.25 –6.75	(d) 6.25 –6.75	(d)6.25 –6.75	(d) 6.25 –6.75	(d) 6.25 –6.75
Other Districts (Western Penna.)	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50	6.25 – 6.50

(a) For shipment to Texas and New Mexico destinations: Group 3 prices are quoted on northern shipment. (b) One refiner quoting. (c) To resellers holding licenses. (d) Two refiners quoting.

REFINERY TANK CAR MARKETS

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). Prices in cents per gallon except heavy fuel oils in dollars per barrel of 42 gallons, tank car lots, FOB refineries in districts designated, except where otherwise noted. Inter-refinery and export prices not included, unless so stated in the respective markets. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Natural Gasoline

(Prices to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

Prices Effective	May 29	May 22
FOB GROUP 3		
Grade 26-70	(m)2.50	(m)2.50
FOB BRECKENRIDGE		
Grade 26-70	(m)2.625	(m)2.50
CALIFORNIA (F.o.b. plants in Los Angeles basin) 75-85, 350-375 e.p. for blending	6.00 – 6.75	6.00 – 6.75

Kerosine

WESTERN PENNA. REFINERY QUOTATIONS		
Bradford-Warren:		
45 gravity w.w.	5.00	5.00
46 gravity w.w.	(e)5.375	(e)5.375
Other districts:		
45 gravity w.w.	5.00 – 5.25	5.00 – 5.25
46 gravity w.w.	(h)5.125	5.125– 5.25
47 gravity w.w.	5.25 – 5.50	5.25 – 5.50
CENTRAL MICHIGAN (a)		
47-49 gravity w.w.	5.05 – 5.25	5.05 – 5.25
OKLAHOMA		
41-43 gravity w.w.	3.75 – 4.25	3.875– 4.25
42-44 gravity w.w.	4.00 – 4.625	4.00 – 4.625
KANSAS (For Kansas destinations only)		
41-43 gravity w.w.	(c)4.25	(c)4.25
42-44 gravity w.w.	4.375– 4.50	4.375–4.50
N. TEX. (b)		
41-43 gravity w.w.	4.00 – 4.50	4.00 – 4.50
N. LA. (For shipment to La. and Ark.)		
41-43 gravity w.w.	(h) 4.00 –4.125	(h) 4.00 –4.125
ARK. (F.o.b. Ark. plant of one refiner for shipment to Ark. and La.)		
41-43 gravity w.w.	4.25	4.25
CALIFORNIA		
40-43 gravity w.w.	5.00 – 7.00	5.00 – 7.00

Gas *and* Fuel Oils

WESTERN PENNA. REFINERY QUOTATIONS		
Bradford-Warren:		
36-40 gravity	(e)4.625	(e)4.625
Other districts: (Excluding Pittsburgh District Prices)		
36-40 gravity	4.25 – 4.375	4.25 – 4.375
CENTRAL MICHIGAN (a)		
P.W. Distillate	4.25 – 4.75	4.25 – 4.75
No. 3 gas oil, Str.	4.00 – 4.25	4.00 – 4.25
U.G.I. gas oil	3.75 – 4.00	3.75 – 4.00
Fuel Oils (Vis. at 100):		
500-700 Vis.	2.00 – 2.50	2.00 – 2.50
300-500 Vis.	2.50 – 2.75	2.50 – 2.75
100-300 Vis.	2.625– 3.25	2.625– 3.25
OKLAHOMA		
No. 1 prime white	3.375– 4.00	3.375– 4.00
No. 1 straw	(h) 3.375–3.625	(h) 3.375–3.625
No. 2 straw	3.25 – 3.625	3.25 – 3.625
No. 2 dark	(h) 3.00 –3.25	(h) 3.125–3.25
U.G.I. gas oil	(h) 3.00 –3.25	(h) 3.25 –3.375
28-30 gravity fuel oil	(e)3.25	(e)3.25
28-30 gravity zero fuel	2.50 – 3.25	2.50 – 3.25
24-26 gravity fuel	(e) $0.85–$0.90	(e) $0.85–$0.90
14-16 gravity fuel	(e)$0.70	(e)$0.70
No. 6 fuel	(h) $0.35–$0.45	(h) $0.35–$0.45
Range oil	(h)3.625	(h)3.625
KANSAS (For Kans. destinations only).		
No. 1 p.w. fuel oil	3.75 – 4.00	3.75 – 4.00
10-14 gravity fuel oil	$0.45 –$0.80	$0.45 –$0.80
N. TEX. (b)		
No. 1 Prime white	(e)3.75	(e)3.75
N. LA. (For shipment to La. and Ark.)		
20-24 gravity fuel	(e) $1.00–$1.05	(e) $1.00–$1.05
16-20 gravity fuel	(e) $0.80–$0.85	(e) $0.80–$0.85
10-14 gravity fuel	(e) $0.70–$0.75	(e) $0.70–$0.75
ARK. (F.o.b. Ark. plant of one refiner, for shipment to Ark. and La.)		
No. 2 fuel	3.375	3.375
28-30 gravity gas oil, zero	3.125	3.125
Tractor Fuel	(j)4.625	(j)4.50

Prices Effective	May 29	May 22
CALIFORNIA		
San Joaquin Valley:		
Heavy fuel	$0.50 –$0.75	$0.50 –$0.75
Light fuel	$0.70 –$0.85	$0.70 –$0.85
Diesel fuel (per gal.)	2.50 – 4.00	2.50 – 4.00
Stove dist. (per gal.)	3.00 – 5.00	3.00 – 5.00
Los Angeles:		
Heavy fuel	$0.50 –$0.90	$0.50 –$0.90
Light fuel	$0.60 –$1.00	$0.60 –$1.00
Diesel fuel (per gal.)	1.875– 4.00	2.00 – 4.00
Stove dist. (per gal.)	2.125– 5.00	2.125– 5.00
San Francisco:		
Heavy fuel	$0.95	$0.95
Light fuel	$1.05	$1.05
Diesel fuel (per gal.)	4.50	4.50
Stove dist. (per gal.)	5.50	5.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100.

Neutral Oils

WESTERN PENNA. REFINERY QUOTATIONS

Viscous Neutrals No. 3 col. (Viscosity at 70° F.)

200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	(e)19.50	(e)19.50
10 p.t.	(e)18.50	(e)18.50
15 p.t.	(e)18.00	(e)18.00
25 p.t.	16.50 –17.00	16.50 –17.00
150 Vis. (143 at 100) 400-405 fl.		
0 p.t.	(e)18.50	(e)18.50
10 p.t.	(e)17.50	(e)17.50
15 p.t.	(e)16.50	(e)16.50
25 p.t.	14.50 –15.50	14.50 –15.50

SOUTH TEXAS

Vis	Color		
Pale Oils: (*Vis. at 100°F.*)			
100	No. 1½-2½	4.50 – 5.00	4.50 – 5.00
200	No. 2-3	6.00 – 6.25	6.00 – 6.25
300	No. 2-3	6.50 – 6.75	6.50 – 6.75
500	No. 2½-3½	7.50 – 7.75	7.50 – 7.75
750	No. 3-4	8.00 – 8.25	8.00 – 8.25
1200	No. 3-4	8.375– 8.75	8.375– 8.75
2000	No. 4	8.50 – 9.25	8.50 – 9.25
Red Oils:			
200	No. 5-6	6.00 – 6.25	6.00 – 6.25
300	No. 5-6	6.50 – 6.75	6.50 – 6.75
500	No. 5-6	7.50 – 7.75	7.50 – 7.75
750	No. 5-6	8.00 – 8.25	8.00 – 8.25
1200	No. 5-6	8.375– 8.75	8.375– 8.75
2000	No. 5-6	8.50 – 9.25	8.50 – 9.25

Note: Red oil prices cover oils with green cast; blue cast red oils are slightly lower in some cases.

MID-CONTINENT (Vis. at 100° F.; F.o.b. Tulsa basis).

Vis.	Color		
Pale Oils:	**(0 to 10 P.P.)**		
60-85	No. 2	5.50	5.50
86-110	No. 2	6.00	6.00
150	No. 3	9.00	9.00
180	No. 3	9.50 –10.00	9.50 –10.00
200	No. 3	10.00 –10.50	10.00 –10.50
250	No. 3	11.00 –11.50	11.00 –11.50
280	No. 3	12.50	12.50
300	No. 3	13.00	13.00
Red Oils:			
180	No. 5	(e)9.00	(e)9.00
200	No. 5	9.00 – 9.50	9.00 – 9.50
280	No. 5	(h) 11.50–11.75	(h) 11.50–11.75
300	No. 5	(h)12.00	(h)12.00

Note: The following oils, of 15 to 25 p.p., are generally quoted these amounts under 0-10 p.p.; viscous oils, 0.5c; non-viscous, 0.25c. Viscous oils (150-300 vis.), No. 4 color, generally are quoted 0.5c above No. 5 color oils.

CHICAGO (Vis. at 100° F.)

Vis.	Color		
Pale Oils 0 to 10 p.p.			
60-85	No. 2	7.25	7.25
86-110	No. 2	7.75	7.75
150	No. 3	9.00	9.00
180	No. 3	10.00	10.00
200	No. 3	10.50	10.50
250	No. 3	11.50	11.50

Prices Effective	May 29	May 22
CHICAGO (Continued)		
Red Oils:		
180—No. 5	9.00	9.00
200—No. 5	9.50	9.50
250—No. 5	10.50	10.50
280—No. 5	11.50	11.50
300—No. 5	11.75	11.75

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower. To obtain delivered prices in Chicago, add 0.25c per gal.

Cylinder Stocks

MID-CONTINENT (F.o.b. Tulsa basis)

Bright Stocks:		
190-200 Vis. at 210° D.	(e)19.00	(e)19.00
150-160 Vis. at 210° D:		
0 to 10 p.p.	14.25 –16.00	14.25 –16.00
10 to 25 p.p.	13.50 –15.00	13.50 –15.00
25 to 40 p.p.	(h) 13.25–13.50	(h) 13.25–13.50
150-160 vis. at 210° E.	12.50 –14.50	12.50 –14.50
120 Vis. at 210° D:		
0 to 10 p.p.	(h) 13.75–14.50	(h) 13.75–14.50
25 to 40 p.p.	(e)12.75	(e)12.75
600 S.R. Dark Green	(e)5.50	(e)5.50
600 S.R. Olive Green	(h) 7.00 –7.50	(h) 7.00 –7.50
631 S.R.	(e)12.50	(e)12.50
Black Oil	(h)3.50 – 4.00	3.50 – 4.00

CHICAGO (Viscosity at 210°)

Unfiltered Steam Refined:		
140	9.00	9.00
160	10.00	10.00
200	11.00	11.00
Bright stocks, 160 vis. at 210. No. 8 color:		
0 to 10 p.p.	15.75	15.75
15 to 25 p.p.	14.75	14.75
30 to 40 p.p.	14.25	14.25
E filtered Cyl. Stock	13.50	13.50

Note: To obtain prices delivered in Chicago, add 0.25c per gal.

WESTERN PENNA. REFINERY QUOTATIONS

600 S.R. filterable	8.00 –10.00	8.00 –10.00
650 S.R.	10.00 –11.50	10.00 –11.50
600 fl.	10.50 –12.00	10.50 –12.00
630 fl.	13.00 –14.00	13.00 –14.00
Bright stock, 145-155 vis. at 210°, 540-550 flash, No. 8 color:		
10 p.t.	18.50 –19.50	18.50 –19.50
15 p.t.	17.50 –18.50	17.50 –18.50
25 p.t.	15.50 –16.50	15.50 –16.50

Petrolatums

WESTERN PENNA. (In bbls., carloads; in tank cars, 0.5c per lb. less. One refiner reports he equalizes freight with nearest refinery to destination).

Snow White	5.875– 6.125	5.875– 6.125
Lily White	4.875– 5.125	4.875– 5.125
Cream White	3.875– 4.125	3.875– 4.125
Light Amber	2.50	2.50
Amber	2.25	2.25
Red	(e)2.125	(e)2.125

Wax

WESTERN PENNA. REFINERY QUOTATIONS

In bbls., carloads, New York.

122-124 A.m.p., w.c. scale	(e)3.00	(e)3.00
124-126 A.m.p., w.c. scale	3.00	2.95 – 3.00

OKLAHOMA (In bbls. or burlap bags, carloads)

124-126 A.m.p., w.c. scale	(h)3.00	(h)3.00

CHICAGO (In bags, carload lots. Melting points are E.M.P. (A.S.T.M.) methods; add 3° F. to convert into A.m.p.)

Fully refined:		
122-124	4.25	4.25
125-127	(i)4.35	(i)4.35
127-129	(i)4.70	(i)4.70
130-132	(i)5.00	(i)5.00
132-134	(i)5.25	(i)5.25
135-137	(i)6.00	(i)6.00

(a) Prices FOB. Central Michigan refinery group basis, for shipment within Mich. Shipments may originate at plants outside Central group. (b) For shipment to Texas and New Mexico destinations: Group 3 prices quoted on northern shipments. (c) Excluding Detroit shipment. (e) One refiner quoting. (f) No quotations reported. (g) To resellers holding licenses. (h) Two refiners quoting. (i) Same prices quoted in bags or slabs loose. (j) For shipment to Ark. points only. (k) Two suppliers quoting. (l) Quotations. (m) Sales.

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes, where levied, are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for March 29, April 12, and April 19, 1939, or write to NPN. These prices in effect May 29, 1939, as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Essolene (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
*Atlantic City, N. J.	6.9	8.7	4	7
*Newark, N. J.	6.9	8.7	4	7
Annapolis, Md.	7.85	9.35	5	8
Baltimore, Md.	7.25	8.75	5	8
Cumberland, Md.	8.65	11.15	5	10
Washington, D. C.	7.5	9	3	9.5
Danville, Va.	8.45	10.95	6	12.9
Norfolk, Va.	7.25	9.75	6	11.5
Petersburg, Va.	7.55	10.05	6	11.7
Richmond, Va.	7.55	10.05	6	10.7
Roanoke, Va.	8.75	11.25	6	11
Charleston, W. Va.	8.05	10.55	6	12.6
Parkersburg, W. Va.	7.35	9.35	6	11.2
Wheeling, W. Va.	8.35	10.25	6	12.2
Charlotte, N. C.	8.4	10.9	7	11.8
Hickory, N. C.	8.95	11.45	7	12.3
Mt. Airy, N. C.	8.8	11.3	7	12.2
Raleigh, N. C.	8.15	10.65	7	11.5
Salisbury, N. C.	8.45	10.95	7	11.9
Charleston, S. C.	7.25	9.75	7	10.6
Columbia, S. C.	8.25	10.75	7	11.6
Spartanburg, S. C.	8.95	11.45	7	12.4

Discount to undivided dealers: thru territory, except New Jersey points, which see in "Note" below: Dealer t.w. price less 0.5c per gal.

*Effective Dec. 1, 1938, S. O. New Jersey posted a minimum retail resale price of 11.2c thru New Jersey, except Trenton area and Cumberland county.

Note: While the above posted prices continue at Atlantic City and Newark, N. J., dealers will pay a net price of 8.2c per gal. for Essolene. Dealers having pumps marked only Esso, Essolene and "Standard" White gasoline will pay 7.7c per gal. for Essolene.

Kerosine Discount: 1c off t.w. price or 25 gals., or more, under contract thru territory (Baltimore City contract not necessary) except no discount in state of New Jersey.

Socony-Vacuum Oil Co., Inc.

(*S. O. New York Division*)

Socony Mobilgas (*Regular Grade*)

	Consumer Tank Car	"Split" Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Metropolitan N.Y. City: Boroughs of Manhattan, Bronx and Brooklyn (Kings and Queens)	6.7	8.3	*5	6.75
Borough of Richmond (Staten Is.)	6.7	8.5	*5	6.75
Albany, N. Y.	6.6	8.7	5	7
Binghamton, N. Y.	7.7	9.7	5	8
Buffalo, N. Y.	7.4	6.8	5	7.5
Jamestown, N. Y.	7	7.9	5	7.5
Plattsburg, N. Y.	7.2	9.7	5	7.5
Rochester, N. Y.	7.6	8.5	5	7.25
Syracuse, N. Y.	7.2	9.2	5	7.25
Danbury, Conn.	7.4	9	4	7.75
Hartford, Conn.	7	9.1	4	6.50
New Haven, Conn.	6.9	8.25	4	6
Bangor, Me.	7	7.8	5	7
Portland, Me.	6.6	7.8	5	6.75
Boston, Mass.	6.6	8	4	6.5
Concord, N. H.	7.4	9.7	5	7.5
Lancaster, N. H.	8.2	10.7	5	8.5
Manchester, N. H.	7.3	9.3	5	7.25
Providence, R. I.	6.6	8.3	4	6.5
Burlington, Vt.	7.1	8.5	5	7.25
Rutland, Vt.	7.5	9	5	7.5

*Plus 2% city sales tax computed at time of each sale.

Discount to undivided dealers: 0.5c less than "split" dealer t.w.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commercial Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Philadelphia, Pa.	7	8.5	5	10
Pittsburgh	8	9.5	5	10.5
Allentown	7.5	9	5	10.5
Erie	8	9	5	10
Scranton	7.5	9	5	10.5
Altoona	8	8.5	5	10.5
Harrisburg	7.5	9	5	10.5
Williamsport	8	9.5	5	10.5
Dover, Del.	...	9	5	10.5
Wilmington	...	8.5	5	9.75
Boston, Mass.	...	8	4	6.25
Springfield, Mass.	...	9.3	4	7
Worcester, Mass.	...	8	4	7
Fall River, Mass.	...	8.5	4	7
Hartford, Conn.	...	9.1	4	6.5
New Haven, Conn.	...	8.25	4	7
Providence, R. I.	...	8.3	4	6.5
Atlantic City, N. J.	...	8.2	4	7
Camden, N. J.	...	8.1	4	7
Trenton, N. J.	...	8.2	4	7
Annapolis, Md.	...	9.35	5	9.5
Baltimore, Md.	...	8.75	5	8
Hagerstown, Md.	...	9.85	5	10
Richmond, Va.	...	10.05	6	10.7
Wilmington, N. C.	...	9.85	7	10.8
Brunswick, Ga.	...	8.5	7	*10.5
Jacksonville, Fla.	...	8.5	8	10

*Georgia has kerosine tax of 1c per gal., not included in above price.

Discount to undivided dealers: Dealer t.w. less 0.5c per gal. except in Georgia and Florida, dealer t.w. and undivided dealer price is same.

S. O. Ohio

Sohio X-70 Gasoline

(Regular Grade)

	Consumer T.W.	†Divided Dlr.	‡S.S.	Gasoline Taxes	Kerosine T.W.
Ohio, Statewide	10.5	9.5	12.5	5	*12
Akron	10.5	8.5	10.5	5	*8.5
Cincinnati	10.5	9	11.5	5	*12
Cleveland	10.5	9.5	12.5	5	*12
Columbus	10.5	9	11.5	5	*12
Dayton	10.5	9	11.5	5	*12
Marietta	10.5	9	11.5	5	*12
Portsmouth	10.5	9.5	12.5	5	*12
Toledo	10.5	8	10.5	5	*12
Youngstown	10.5	9	11.5	5	*11.5

Renown Gasoline

(Third Grade)

Ohio, Statewide	10	9	11	5	....
Akron	10.5	8.5	10.5	5	....
Cincinnati	10.5	9	11.5	5	....
Cleveland	10	9	11	5	....
Columbus	10	8.5	10	5	....
Dayton	10.5	9	11.5	5	....
Marietta	10.5	9	11.5	5	....
Portsmouth	10	9	11	5	....
Toledo	10	7.5	9	5	....
Youngstown	10.5	9	11.5	5	....

Note: Prices at other Ohio points may be obtained by writing NPN.

*Ohio has kerosine tax of 1c per gal., not included in above prices.

†This price also to authorized agents, exclusive of 0.5c rental.

‡Prices are at company-operated service stations.

Discount to undivided dealers: 0.5c less than divided dealer t.w.

Sales tax: Ohio's 3% sales tax, effective Jan. 27, 1935, is added "where assessable, to regular posted prices", S. O. Ohio says.

S. O. Kentucky

Crown Gasoline (*Regular Grade*)

	Consumer T.W.	Net Dlr.	Gasoline Taxes	Kerosine T.W
Covington, Ky.	11.5	8.5	6	9.5
Lexington, Ky.	13	10	6	10
Louisville, Ky.	11.5	8.5	6	9
Paducah, Ky.	12	9	6	9
Jackson, Miss.	10.5	7.5	7	*9
Vicksburg, Miss.	12	9	7	*8.5
Birmingham, Ala.	13	10	*8	8.5
Mobile, Ala.	12	9	*9	8.5
Montgomery, Ala.	12	10	*9	*9.5
Atlanta, Ga.	13.5	10.5	7	*8
Augusta, Ga.	12.5	9.5	7	*8
Macon, Ga.	13	10	7	*9
Savannah, Ga.	11.5	8.5	7	*7
Jacksonville, Fla.	11.5	8.5	8	8
Miami, Fla.	11.5	8.5	8	8
Pensacola, Fla.	11.5	8.5	*9	8
Tampa, Fla.	11.5	8.5	8	8

Kyso Gasoline (*Third Grade*)

Covington, Ky.	10	7.5	6	....
Lexington, Ky.	11.5	9	6	....
Louisville, Ky.	10	7.5	6	....
Paducah, Ky.	10	7.5	6	....
Jackson, Miss.	8.5	6	7	....
Vicksburg, Miss.	10	7.5	7	....
Birmingham, Ala.	11	8.5	*8	....
Mobile, Ala.	9.5	7	*9	....
Montgomery, Ala.	11	8.5	*9	....
Atlanta, Ga.	11.5	9	7	....
Augusta, Ga.	11	8.5	7	....
Macon, Ga.	11.5	9	7	....
Savannah, Ga.	9.5	7	7	....
Jacksonville, Fla.	10	7.5	8	....
Miami, Fla.	10	7.5	8	....
Pensacola, Fla.	10	7.5	*9	....
Tampa, Fla.	10	7.5	8	....

Discounts to all tank wagon consumers: Effective Jan. 4, 1937, thru territory, on Crown gasoline, 3c per gal. below consumer t.w. price; on Kyso, 2.5c below, regardless of quantity purchased, per month

**Taxes*: In the tax column is included these city and county gasoline taxes at the following points: Mobile, 2c city; Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have kerosine taxes of 1c per gal., and Mississippi 0.5c, not included in above prices.

S. O. Indiana

Red Crown (*Regular Grade*) Stanolind (*Third Grade*)

	Red Crown Cons. T.W.	Dealer Prices Red Crown	Stanolind	Gasoline Taxes	Kerosine T.W.
Chicago, Ill.	11.1	9.1	7.4	4	10
Decatur, Ill.	11.1	9.6	7.7	4	10
Joliet, Ill.	11.1	9.6	9.1	4	10
Peoria, Ill.	11.1	9.6	9.1	4	10
Quincy, Ill.	10.9	9.4	6.8	4	9.7
Indianapolis, Ind.	11.8	10.3	9.8	5	*10.7
Evansville, Ind.	11.6	10.1	8	5	*10.5
South Bend, Ind.	12.1	10.6	10.1	5	*10
Detroit, Mich.	9.1	7.6	7.1	4	7.1
Grand Rapids, Mich.	10	8.5	8	4	9.7
Saginaw, Mich.	11.8	9.1	8.1	4	9.3
Green Bay, Wis.	11.9	10.1	8.3	5	10.8
Milwaukee, Wis.	10.4	8.9	7.8	5	10.2
La Crosse, Wis.	11.5	10	9.5	5	10.4
Minneapolis-St. Paul	11.5	10	9	5	10.4
Duluth, Minn.	11.9	10.4	9.4	5	10.8
Mankato, Minn.	11.5	10	9.5	5	9.4
Des Moines, Ia.	10.9	9.4	8	4	*9.8
Davenport, Ia.	11.1	9.6	9.1	4	*10
Mason City, Ia.	11.3	9.8	9.1	4	*10.2
St. Louis, Mo.	10.2	8.7	7.5	*4	8
Kansas City, Mo.	10.4	8.4	6.9	*4	8
St. Joseph, Mo.	10.4	8	7	*4	8.4
Fargo, N. D.	12.7	11.2	10.7	4	11.6
Huron, S. D.	12	10.5	10	5	10.9
Wichita, Kans.	9.9	7.1	6.5	4	7.4

*Taxes: in the tax column is included these city and state gasoline taxes at following points: Kansas City, St. Joseph and St. Louis, 1c city tax. Kerosine taxes: Indiana has 4c, Iowa 3c per gal. state tax, not included in above prices.

S. O. Nebraska

Standard Red Crown Gasoline (*Regular Grade*)

	T.W.	Dealer	Gasoline Taxes	Kerosine T.W.
Omaha, Neb.	11.5	10	6	10.3
McCook	11	8	6	9
Norfolk	10	8.9	6	9
North Platte	12.3	9.9	6	11.1
Scottsbluff	11	8.9	6	11

S. O. Louisiana

Essolene (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Little Rock, Ark.	7.25	9.75	7 5	10
Alexandria, La.	6.75	9 25	8	*11 5
Baton Rouge, La.	6.75	9.25	8	*9 5
New Orleans, La.	6.75	9.25	*10	*9
Lake Charles, La.	6.75	9.25	8	*11.5
Shreveport, La.	5.5	8	8	*10
Lafayette, La.	7	9.5	8	*10
Bristol, Tenn.	10.25	8.5	8	13
Chattanooga, Tenn.	9.5	11	8	14
Knoxville, Tenn.	10	12.5	8	14.5
Memphis, Tenn.	8	10.5	8	11
Nashville, Tenn.	9	11.5	8	12

*Taxes: New Orleans gasoline tax includes 7c state, 1c federal, and 2c parish tax. Louisiana has kerosine tax of 1c per gal.; in addition New Orleans has 1c parish tax, none of which are included in above prices.

Price basis to dealers: Undivided dealers get dealer price, less 0.5c.

Above prices include these inspection fees on both gasoline and kerosine unless otherwise specified, per gallon, figured on basis of 50 gallons per barrel:

Alabama, 1/40c on gasoline, 1/2c on kerosine; Arkansas, 1/5c per gal. in a single barrel, 1/20c per gal. in bulk; Florida 1/8c; Illinois, 3/100c; Indiana, 1/5c per gal. in lots up to 25 bbls.; 2/25c per gal. in lots of 25 bbls. or more; Kansas, 1/50c, (3/50c can be charged to meet inspection department expenses); Louisiana, 1/32c; Minnesota, 1/25c; Missouri, 3/100c; Nebraska, 3/100c; Nevada, gasoline, 1/20c; North Carolina, 1/4c; North Dakota, 1/20c; Oklahoma, 2/25c per gal. lots of more than 50 in bbls., 1/5c in lots less than 50 bbls.; South Carolina, 1/8c; South Dakota, 1/10c; Tennessee, 2/5c; and Wisconsin, 3/100c.

Kerosine inspection fee only: Iowa, 3/50c; Michigan, 1/5c per gal.

TANK WAGON MARKETS

Tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied, are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for March 29, April 12, and April 19, 1939, or write to NPN. These prices in effect May 29, 1939, as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

Humble Oil & Refining Co.

Humble Motor Fuel
(*Regular Grade*)

	*T.W.	S.S.	Gasoline Taxes	Kerosine T.W.
Dallas, Tex	8	12	5	8
Ft. Worth, Tex	8	12	5	7
Houston, Tex	8	12	5	8
San Antonio, Tex	9	13	5	8

U. S. Motor Gasoline
(*Third Grade*)

Dallas, Tex	6.5	9	5	
Ft. Worth, Texas	6.5	9	5	
Houston, Tex	6.5	..	5	
San Antonio, Tex	6.5	..	5	

Thriftane
(Leaded, 67 Octane, Purple Gasoline)

Houston	7	10	5	
San Antonio	8	11	5	

*These tank wagon prices apply to all classes of dealers and consumers.

Continental Oil

Conoco Bronz-z-z (Regular Grade)

	Consumer T.W.	Dealer	Gasoline Taxes	Kerosene T.W.
Denver, Col	12.5	10.5	5	11.5
Grand Junction, Col	15	13	5	15
Pueblo, Col	11	9	5	9
Casper, Wyo	14	12	5	11.5
Cheyenne, Wyo	12	10	5	13
Billings, Mont	12	12	6	13
Butte, Mont	13.5	13.5	6	15.5
Great Falls, Mont	13	13	6	15.5
Helena, Mont	14	14	6	15.5
Salt Lake City, Utah	12	12	5	16
Boise, Ida	14.1	14.1	6	18
Twin Falls, Ida	14.6	14.6	6	18
Albuquerque, N. M	10	10	†6.5	10
Roswell, N. M	8.5	8.5	†6.5	8
Santa Fe, N. M	10	10	*7	10
Ft. Smith, Ark	9	9	5	7.5
Little Rock, Ark	9.25	9.25	7.5	8
Texarkana, Ark	8	8	5	8
Muskogee, Okla	7	7	5	7
Oklahoma City, Okla	6	6	5	6.5
Tulsa, Okla	7	7	5	7

Demand Gasoline
(Third Grade)

Denver, Col	10.5	9.5	5	....
Grand Junction, Col	13	12	5	....
Pueblo, Col	9	8	5	....
Casper, Wyo	12	11	5	....
Cheyenne, Wyo	10	9	5	....
Billings, Mont	11	11	6	....
Butte, Mont	10.5	10.5	6	....
Great Falls, Mont	10	10	6	....
Helena, Mont	13	13	6	....
Salt Lake City, Utah	11	11	5	....
Boise, Ida	13.1	13.1	6	....
Twin Falls, Ida	13.6	13.6	6	....
Albuquerque, N. M	8	8	†6.5	....
Roswell, N. M	7.5	7.5	†6.5	....
Santa Fe, N. M	7	7	*7	....
Ft. Smith, Ark	6.5	6.5	5	....
Little Rock, Ark	8	8	7.5	....
Texarkana, Ark	6.5	6.5	5	....
Muskogee, Okla	6	6	5	....
Oklahoma City, Okla	5	5	5	....
Tulsa, Okla	6	6	5	....

†Includes city tax of 0.5c.
*Includes 1c city tax.
‡Prices are in t.w. deliveries to consumers and dealers.
**Prices include 0.1c to cover 1-mill tax for toll bridges.

S. O. California

Standard Gasoline
(*Regular Grade*)

	T.W.	S.S.	Gasoline Taxes	Kerosine T.W.
San Francisco, Cal	13.5	14.5	4	11.5
Los Angeles, Cal	13	14	4	10
Fresno Cal	14.5	15.5	4	12.5
Phoenix, Ariz	15.5	16.5	6	*12.5
Reno, Nev	15.5	16.5	5	13.5
Portland, Ore	14	15	6	13.5
Seattle, Wash	14	15	6	†13.5
Spokane, Wash	16	17	6	†16.5
Tacoma, Wash	14	15	6	†13.75

Flight Gasoline
(*Third Grade*)

San Francisco, Cal	12	13	4	....
Los Angeles, Cal	11.5	12.5	4	....
Fresno, Cal	13	14	4	....
Reno, Nev	14	15	5	....
Phoenix, Ariz	11	12	6	....
Portland, Ore	12.5	13.5	6	....
Seattle, Wash	12.5	13.5	6	....
Spokane, Wash	14.5	15.5	6	....
Tacoma, Wash	12.5	13.5	6	....

*Arizona has kerosine tax of 5c per gal., not included in above prices.

†Washington has 0.25c per gal. tax on kerosine sales, not included in above prices.

Discount to 100% *dealers, thru territory*, off posted t.w. prices, on gasolines: on Standard Ethyl, Standard Gasoline and Stanavo Aviation, 3c per gal.; on Flight gasoline, 2c.

Canada

PRICES OF IMPERIAL OIL LTD.

Per Imperial Gallon, which is 1.2 U. S. Gallons

3-Star Imperial Gasoline
(*Regular Grade*)

	T.W.	Gasoline Taxes	Kerosine T.W.
Hamilton, Ont	15	8	15.5
Toronto, Ont	15	8	15.5
Brandon, Man	21	7	22
Winnipeg, Man	19.5	7	20.5
Regina, Sask	19	7	21
Saskatoon, Sask	21.3	7	23.3
Edmonton, Alta	19.5	7	21.5
Calgary, Alta	16.5	7	18.5
Vancouver, B. C.	16	7	23
Montreal, Que	14	8	14.5
St. John, N. B	13.5	10	17.5
Halifax, N. S	13.5	10	17.5

Discounts to undivided dealers, 1c off t.w. price, except Maritime Provinces where undivided dealers pay t.w. price. Divided dealers pay t.w. price, thru territory.

Aviation Gasoline

Following are tank car, tank wagon or dealer prices, as indicated, of aviation gasoline in several marketing territories.

S. O. OHIO
Thru Ohio
Esso Aviation

	Consumer T.W.	Gasoline Taxes
74 octane	15.5	5
80 octane	16.5	5
87 octane	17.5	5

Discounts: For delivery on contract to hangar operators and resellers: 2c below consumer posted t.w. price, shown above.

S. O. INDIANA
Stanavo Ethyl Aviation Gasoline
73 Octane Number

Chicago, Ill	14.9	
Detroit, Mich	16.5	4
Milwaukee, Wis	15.1	5
Minneapolis, Minn	15.3	5
St. Louis, Mo	14.5	3
Kansas City, Mo	14.2	*4
Fargo, N. D	16.5	4
Huron, S. D	15.8	5

*Includes 1c city tax.

HUMBLE OIL & REFINING CO.
74 Octane Aviation Gasoline, Clear

	Tank Car
FOB Baytown, Tex	8.5

CONTINENTAL OIL CO.
Conoco Special Gasoline

	Dealer Price	Gasoline Taxes
Denver, Colo	14.5	5
Cheyenne, Wyo	15	5
Helena, Mont	22	6
Salt Lake City, Utah	17.5	5
Albuquerque, N. M	14	*6.5

*Includes city tax of 6.5c.

S. O. CALIFORNIA
Stanavo Aviation Gasoline

	T.W.	
Phoenix, Ariz	17.5	6
Los Angeles, Cal	15	4
San Francisco, Cal	15.5	4
Reno, Nev	17.5	5
Portland, Ore	16	6
Seattle, Wash	16	6
Spokane, Wash	19	6

Note: For discounts, etc., see note under Standard and Flight gasoline above.

Naphtha (In Tank Wagon)

S. O. NEW JERSEY
Posted Tank Wagon Prices

	Mineral Spirits	V.M.&P.
Newark, N. J	11.5	15.5
Baltimore, Md	15.5	....
Washington, D. C	15	....

Discounts: Buyers taking following quantities at one time, get these discounts: Newark, 2c per gal. on 200 gals. or more; less than 200 gals., 0.5c higher price. Baltimore 2c off on 25 to 100 gals. and 3c on over 100 gals. Washington, 2c off to contract buyers.

SOCONY-VACUUM OIL CO.

Buffalo, N. Y	10.5	12
*New York City	9.5	10.5
Rochester, N. Y	12	12
Syracuse, N. Y	12	14.5
Boston, Mass	11	11
Bridgeport, Conn	11	11.5
Hartford, Conn	10.5	11
Providence, R. I	11	12

*Prices apply to consumers only in quantities over 1,000 gals. annually. For quantities under 1,000 gals. annually, add 0.5c per gal.

ATLANTIC REFINING CO.

Philadelphia, Pa	11.5	12.5
Lancaster, Pa	13	14
Pittsburgh, Pa	12.5	14.5

Note: Prices for Mineral Spirits also apply to Stoddard Solvent; and prices for V.M.&P. Naphtha apply also to Light Cleaners Naphtha.

S. O. OHIO

	S.R. Solvent	V.M.&P. Naphtha
Thru Ohio	12.5	13.5

Note: V.M.&P. Naphtha prices also apply on Dry Cleaners naphtha and special Varnolene; Varnolene and Sohio Solvent 0.5c below these prices. Discounts to contract consumers off t.w. price; 300 to 999 gals., 0.5c; 1,000 to 2,499 gals., 0.75c; 2,500 to 4,999 gals., 1c; 5,000 or more gals., 1.5c.

S. O. INDIANA
(Prices include state and federal taxes)

	Oleum Spirits	V.M.&P. Naphtha	Stanisol
Chicago, Ill	16.2	16.5	15.9
Detroit, Mich	19.2	18.2	19.7
Kansas City, Mo	13.9	14.9	14.4
St. Louis, Mo	14.2	15.2	12.9
Milwaukee, Wis	18.8	19.8	19.3
Minneapolis, Minn	19	20	17.7

Note: All prices, with exception of Missouri points, include state tax. Prices shown are base prices, before discounts.

Naphtha (In Tank Cars)

In Tank Cars (F. o. b. refinery or seaboard terminal except Ohio, delivered price.)

	V.M.&P. Naphtha	Solvent
Baltimore	10.5	9.5
New York Harbor	10	9
Philadelphia district	10.5	9
Boston	10.5	9.5
Providence	10.5	9.5
†Ohio points, delivered	8.5	*8

*This is on rubber solvent.
†In Ohio, prices on D.C. naphtha and special Varnolene are same as V.M.&P.; on Varnolene and Sohio Solvent, prices are 0.125c less than on V.M.&P.

Price Changes

Dates and amounts of changes. See table for full current prices.

S. O. New Jersey—Essolene and Kerosine: Cut from 0.05c to 0.8c, thru North Carolina, to cover freight rate reduction, May 18. Charlotte gasoline cut 0.25c, kerosine 0.3c; Hickory 0.2c; Mt. Airy gasoline 0.15c, kerosine 0.1c; Raleigh 0.1c; and Salisbury, 0.3c.

Socony-Vacuum Oil—Socony Mobilgas: "Split" dealer t. w. prices changed at these points: Jamestown cut 0.4c, May 13; Plattsburg, up 0.2c, May 18; Danbury, cut 0.5c, May 25; Lancaster up 1.4c, May 15; and Manchester cut 0.7c, May 15.

Atlantic Refining—Atlantic White Flash: Springfield dealer t. w. cut 0.5c, May 19. Fall River dealer t. w. cut 0.6c, May 19.

S. O. Indiana—Red Crown, Stanolind and Kerosine: In the May 23 advance, reported on page 42 of May 24 issue, the following points were affected, on dealer prices only: Red Crown and Stanolind up 1c, Chicago and Decatur; Red Crown up 1c, Stanolind 0.7c, Joliet; Red Crown up 0.5c, Stanolind 0.6c, Peoria; Red Crown up 0.5c, Stanolind 1c, Quincy; and Stanolind only, dealer prices up 0.9c, Indianapolis, 1c Evansville, and 0.9c, South Bend. Kerosine t. w. up 1c, Quincy and South Bend, and 0.7c, Indianapolis.

Red Crown and Stanolind: Subnormal consumer t. w. and dealer prices advanced to normal, or 0.5c, where they have been subnormal more than 0.5c, thru Wisconsin, May 27.

Kerosine and Tractor Fuel: Subnormal t. w. prices advanced to normal, or 0.5c where subnormalcy exceeds 0.5c, thru Wisconsin, May 27. In this advance, Green Bay Red Crown dealer prices up 0.1c, Stanolind dealer 0.5c, and kerosine t. w. 0.5c; and Milwaukee Red Crown t. w. and dealer and Stanolind dealer up 0.5c; La Crosse unchanged.

S. O. Louisiana—Kerosine: Memphis t. w. cut 1.5c, May 17.

Coming Meetings

World Automotive Engineering Congress, sponsored by S. A. E., San Francisco, Hotel Fairmont, June 6-8.

Illinois-Indiana Petroleum Assn., annual meeting, Robinson, Ill., June 3.

Fire and Safety Marshals of National Petroleum Assn., 14th annual meeting, Hotel Schenley, Pittsburgh, June 6 and 7.

National Conference on Weights and Measures, National Bureau of Standards Bldg., and Washington Hotel, Washington, D. C., June 6 to 9.

National Assn. of Credit Men, 44th annual congress, Grand Rapids, Mich., June 11 to 15.

Oil Trades Assn. of New York, sports day, Pelham Country Club, Pelham, N. Y., June 13.

Illinois Assn. of Petroleum Retailers, annual convention, Pere Marquette Hotel, Peoria, Ill., June 13, 14, 15.

North Carolina Oil Jobbers Assn., Raleigh, N. C., June 14.

Cincinnati Oil Club, annual picnic, Miami Boat Club, Miamiville, O., June 15.

Pennsylvania Grade Crude Oil Assn., annual meeting, Pittsburgh, Pa., June 15, 16.

13th International Congress of Carbide, Acetylene, Oxy-Acetylene Welding & Allied Industries, Munich, Germany, June 25 to July 1.

American Society for Testing Materials, 42nd annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 26 to 30.

American Institute of Mining and Metallurgical Engineers, regional meeting, San Francisco, July 10 to 17.

The Eastern United States Michigan Oil & Gas Exposition, Mt. Pleasant, Mich., Aug. 1 to 6.

Retail Gasoline Dealers Assn. of Wisconsin, 7th annual convention, Hotel Retlaw, Fond du Lac, Wis., Aug. 8, 9.

American Institute of Mining and Metallurgical Engineers, Industrial Minerals Division, Tuscaloosa, Ala., Sept. 2, 3, 4.

American Society of Mechanical Engineers, Hotel Pennsylvania, and Engineering Societies Bldg., 29 West 39th St., New York, Sept. 4 to 8.

Oil Workers International Union, Hammond Ind., Sept. 5.

American Chemical Society, Detroit, Sept. 9 to 13.

Montana National Bituminous Conference, Sun Valley, Idaho, Sept. 11 to 14.

American Chemical Society, Boston, Mass., Sept. 11 to 15.

National Petroleum Assn., 37th annual meeting, Hotel Traymore, Atlantic City, N. J., Sept. 13, 14, 15.

Oil Trades Assn. of New York, sports day, Pelham Country Club, Pelham, N. Y., Sept. 19.

New Jersey Oil Trades Assn., fall outing, Sept. 28.

National Lubricating Grease Institute, Stevens Hotel, Chicago, Oct. 2, 3.

American Institute of Mining and Metallurgical Engineers, Petroleum Division, Galveston, Tex., Oct. 4, 5, 6.

American Gas Assn., annual convention, New York, Oct. 9, 10.

Independent Petroleum Assn. of America, 10th annual meeting, Ft. Worth, Tex., Oct. 18-20.

National Tax Conference, Palace Hotel, San Francisco, week of Oct. 16.

40th Annual National Automobile Show, Grand Central Palace, New York, week of Oct. 15.

National Safety Congress and Exposition, Convention Hall, Atlantic City, N. J., Oct. 16 to 20.

American Institute of Mining and Metallurgical Engineers, Petroleum Division, Los Angeles, Oct. 19, 20.

Colorado Petroleum Industries Committee, annual convention, Shirley-Savoy Hotel, Denver, Oct. 27.

Oil Trades Assn. of New York, annual banquet, Waldorf-Astoria Hotel, New York, Nov. 1.

National Motor Truck Show, Navy Pier, Chicago, Nov. 8-16.

American Petroleum Institute, 20th annual meeting, Stevens Hotel, Chicago, Nov. 13-17.

American Institute of Chemical Engineers, 32nd annual meeting, Providence-Biltmore Hotel, Providence, R. I., Nov. 15, 16, 17.

American Society of Mechanical Engineers, Philadelphia, Pa., Dec. 4 to 7.

17th Exposition of Chemical Industries, Grand Central Palace, New York, Dec. 4 to 9.

TRADEMARKS

The following are trademark applications pertinent to our field pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Munsey Building, Washington, D. C., trademark specialists.

As an additional service feature to its readers, this journal gladly offers to them an advance search free of charge on any mark they may contemplate adopting or registering. You may communicate with the Editor of this Department, or send your inquiry direct to the National Trade-Mark Company, stating that you are a reader of this journal.

Published May 23, 1939

PANCO and picture of yowling panther. Ser. No. 417,181. Panther Oil & Grease Mfg. Co., Fort Worth, Tex. Filed March 17, 1939.

For lubricating oils and greases.

SIMPLOMATIC. Ser. No. 416,359. American Iron & Machine Works Company, Oklahoma City, Okla. Filed Feb. 24, 1939.

For oil field equipment—namely, bailers, break-out blocks, blowout preventers, core barrels, core bits, crown-blocks, cat-heads, draw-works, drilling rigs, drill bits, engine bases, engine braces, engine pistons, mud-pump valves, inside pipe-cutters, pipe racking apparatum, pipe-swivels, pipe-tongs, pipe elevators, rocker arms, releasing joints, rotary tables, shale separators, sheaves, water cooling apparatus for rope-drums and brake-drums, water softening apparatus of a mechanical nature and exclusive of traps, for introducing chemicals to boiler feed water, whipstocks, wrenches, blow-beans, paraffin removing apparatus, pressure flow apparatus for wells, sucker-rod couplings, sucker-rod guides, sucker-rod reciprocating apparatus, wall packers, well pumps, casing heads, well tubing supports, tubing heads, and metal portable tool houses.

TANK WAGON MARKETS, HEATING OILS

Prices in Effect May 29, 1939

Following are posted tank wagon prices of various grades of heating oil at the points shown in various territories. Prices are in cents per gallon.

S. O. NEW JERSEY

	No. 1	No. 2	No. 4
Atlantic City, N. J.	7.0	5.75	5.75
Newark	7.0	5.75	5.75
Annapolis, Md.	....	6.5	....
Baltimore	6.75	6.25	5.75
Washington, D. C.	7.00	6.50	6.50
Norfolk, Va.	7.0	6.0	6.0
Petersburg	7.25	6.25	....
Richmond	7.25	6.25	6.25
Charlotte, N. C.	8.75	7.75	....
Hickory	....	8.25	....
Raleigh	8.75	7.25	....
Charleston, S. C.	8.5	7.0	....
Columbia	9.5	8.0	....
Spartanburg	10.2	8.7	....

SOCONY-VACUUM OIL CO. INC.
(S. O. New York Division)

	No. 2	No. 3	No. 4
New York City	5.75	5.75	5.75
Albany, N. Y.	5.75	5.75	5.25
Rochester, N. Y.	6.75	6.75	6.75
Boston, Mass.	5.50	5.50	5.50
Bangor, Me.	6.00	6.00	6.00
Manchester, N. H.	6.00	6.00	6.00
Burlington, Vt.	6.25	6.25	6.25
Hartford, Conn.	6.00	6.00	6.00
New Haven, Conn.	5.50	5.50	5.50
Providence, R. I.	5.50	5.50	5.50

Note: Prices for No. 1 fuel in Socony-Vacuum territory same as for kerosine which see in tank wagon table for various cities; prices change with kerosine.

ATLANTIC REFINING

	Numbers					
	1	2	3	4	5	6
Phila., Pa.	7.75	6.0	6.0	6.0	3.25	2.50
Allentown, Pa.	8.5	6.5	6.5	6.5	....	....
Wilmington, Del.	7.75	5.5	5.5	5.5	....	....
Springfield, Mass.	7.0	5.5	....	....	....	....
Worcester, Mass.	7.0	5.50	....	5.50	....	....
Hartford, Conn.	6.5	6.0	....	6.0	....	....

S. O. OHIO

	No. 1	No. 2	No. 3
Columbus Division and Cleveland	7.50	7.50	7.00
City of Lima	8.00	8.00	7.00
Rest of Ohio	8.00	8.00	7.50

Note: S. O. Ohio prices are for full compartment hose dumps, bucket dumps are 0.5c per gallon higher.

S. O. INDIANA
Stanolex Fuel and Furnace Oils

	No. 1 Fuel	Stanolex Furnace
Chicago	(a)6.75	6.75
Indianapolis	....	(b)7.8
Detroit	....	7.1
Milwaukee	8.4	7.7
Minneapolis	7.8	7.8
St. Louis	7.7	(c)6.7
Kansas City	6.8	6.8

(a) For 400 gals. and over; 150 to 399 gals., 7.25c; 1 to 149 gals., 8.25c.

(b) Excluding 4c state tax.

(c) For 400 gals. & over; 100 to 399 gals., 7c; 1 to 99 gals., 8c.

Note: Small-lot deliveries of light fuel oils range up to 2c higher than above quotations.

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline-Kerosine		Distillate-Gas Oil-Fuel Oil	
	Cents per Cwt.	Cents per gal. 6.6 lbs.	Cents per Cwt.	Cents per gal. 7.4 lbs.
Chicago, Ill.	40	2.640	32	2.368
Decatur, Ill.	39	2.574	31	2.294
Joliet, Ill.	40	2.640	32	2.368
Peoria, Ill.	39	2.574	31	2.294
Quincy, Ill.	36	2.376	29	2.146
Indianapolis, Ind.	48	3.168	39	2.886
Evansville, Ind.	46	3.036	37	2.738
South Bend, Ind.	53	3.498	42	3.108
Detroit, Mich.	64	4.224	51	3.774
Gd. Rapids, Mich.	62	4.092	50	3.700
Saginaw, Mich.	66	4.356	53	3.922
Green Bay, Wis.	51	3.366	41	3.034
Milwaukee, Wis.	43	2.838	34.5	2.553
LaCrosse, Wis.	46	3.036	37	2.738
Min'ap'ls-St. Paul	46	3.036	37	2.738
Duluth, Minn.	52	3.432	41.5	3.071
Mankato, Minn.	46	3.036	37	2.738
Des Moines, Ia.	36	2.376	29	2.146
Davenport, Ia.	39	2.574	31	2.294
Mason City, Ia.	42	2.772	33.5	2.479
St. Louis, Mo.	33	2.178	26.5	1.961
Kansas City, Mo.	28	1.848	22.5	1.665
St. Joseph, Mo.	28	1.848	22.5	1.665
Fargo, N. D.	63	4.158	50.5	3.737
Minot, N. D.	83	5.478	66.5	4.921
Huron, S. D.	53	3.498	42.5	3.145
From Ponca City	13	*0.858	13	†0.858
Wichita				
From Tulsa	21	*1.386	21	†1.386
From Cushing	19	*1.254	19	†1.254

*This rate also includes distillate rate at 6.6 lbs. per gal.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

SEABOARD MARKETS, EXPORT AND COASTWISE

All prices on this page are publisher's opinion of open market quotations or sales, for spot shipment (10 to 15 days). In cargo markets, spot shipment is 90 days. Prices in cents per gallon, except heavy fuel oil in dollars per barrel, in tank car lots, f.o.b. refineries or seaboard terminals in districts designated, unless otherwise noted. Federal, state or municipal taxes not included. Prices quoted apply on products made from legally produced crude. Unless otherwise noted, gasoline octane ratings are determined by C.F.R. Motor method, A.S.T.M. D-357-33T; and lubricating oil specifications determined according to A.S.T.M. methods, unless otherwise noted.

Eastern Domestic

(Inter-refinery and export prices not included.)

MOTOR GASOLINE

Prices Effective	May 29	
District:	**60-64 Oct.**	**65 Oct. & Above**
N. Y. harbor	5.75 – 6.25	6.00 – 6.25
(a) N. Y. harbor	5.75 – 6.00	5.75 – 6.00
Philadelphia	5.75 – 6.50	6.00 – 6.50
Baltimore	5.75 – 6.25	6.00 – 7.00
Norfolk	6.25 – 6.50	6.25 – 6.50
Wilmington, N. C.	(n) 6.00 –6.50	6.25 – 7.00
Charleston, S. C.	6.00 – 6.50	6.25 – 7.00
Savannah	5.75 – 6.50	6.00 – 6.50
Jacksonville	5.75 – 6.50	6.00 – 6.50
Portland	6.25 – 6.50	6.50 – 7.00
Boston	5.75 – 6.35	6.00 – 6.50
Providence	5.75 – 6.35	6.00 – 6.50

WATER WHITE KEROSINE

District:			
N. Y. harbor	4.375–4.50	Charleston	4.75 –5.25
(a) N. Y. harbor	4.25 –4.375	Savannah	5.00 –5.25
Philadelphia	4.50 –5.00	Jacksonville	5.00 –5.25
Baltimore	4.75 –5.00	Portland	(n) 4.50
Norfolk	4.75 –5.00	Boston	4.375
Wilmington, N.C.	4.75 –5.25	Providence	4.375

(b) FUEL OILS

	N. Y. harb.	N. Y. harb. barges
No. 1	4.375– 4.50	4.25 – 4.375
Nos. 2-3	3.875– 4.00	3.75
No. 4	3.625– 4.00	3.50 – 3.75
No. 5	(m) $1.15	
No. 6	$0.95	

	Phila. dist.	Balt. dist.
No. 1	4.50 – 5.00	4.75 – 5.00
Nos. 2-3	4.25	4.25
No. 4	4.00 – 4.25	4.00 – 4.25
No. 5	$1.15	$1.15
No. 6	$0.95	$0.95

	Bost. dist.	Prov. dist.
No. 1	4.375	4.375
Nos. 2-3	3.875	3.875
No. 4	3.75 – 4.00	3.75 – 4.00
No. 5	$1.25	$1.15
No. 6	$0.95 –$1.05	$0.95

(c) Bunker

District:	C Fuel	(c) Diesel Oil
N. Y. harbor	$0.95	$1.65 –$1.70
Philadelphia	$0.95	$1.65
Baltimore	$0.95	$1.65
Norfolk	$0.95	$1.65
Charleston	$0.90	$1.65
Savannah	$0.90	$1.785
Jacksonville	$0.90	$1.785
Tampa	$0.85	$1.785
Portland	$0.95 –$1.05	$1.75
Boston	$0.95 –$1.05	$1.65
Providence	$0.95	$1.65

	Gas Oil 28-34 Gravity	Diesel Oil Shore Plants
N. Y. harbor	3.875– 4.125	3.75 – 4.00
Philadelphia dist.	4.25	....
Baltimore dist.	4.25	....
Norfolk dist.	4.25	....
Savannah dist.	....	4.25
Jacksonville dist.	....	4.25

Pacific Export

(c) (Quotations are at seaboard, Los Angeles, in cargo lots, cents per gal., except where otherwise noted.)

Prices Effective	May 29	May 22
U. S. Motor, under 65 oct.	4.00 – 4.125	4.00 – 4.125
400 e.p. blend, under 65 oct.	4.125– 4.25	4.125– 4.25
400 e.p. blend 65 oct. & above	4.25 – 4.50	4.25 – 4.50
(d) 38-40 gravity, w.w. kerosine	4.25 – 4.50	4.25 – 4.50
41-43 gravity, w.w. kerosine	4.50 – 4.75	4.50 – 4.75
44 gravity, w.w. kerosine	5.00 – 5.25	5.00 – 5.25
In Cargo lots, per bbl.		
Diesel fuel, 24 & above	$0.95 –$1.05	$0.95 –$1.05
Diesel fuel, under 24 ..	$0.85 –$0.90	$0.85 –$0.90
(f) 30-34 gravity, diesel (gas oil)	$1.05 –$1.20	$1.05 –$1.20
(g) Grade C fuel oil	$0.58 –$0.65	$0.58 –$0.65

Prices Effective	May 29	May 22
In Ships' Bunkers, or deep tank lots, per bbl.:		
(f) Diesel fuel oil	$1.35 –$1.45	$1.35 –$1.45
(g) Grade C fuel oil	$0.70 –$0.90	$0.70 –$0.90
Cased Goods: (Per case)		
U. S. Motor	$1.35 –$1.45	$1.35 –$1.45
400 e.p. blend, under 65 octane	$1.40 –$1.50	$1.40 –$1.50
375-400 e.p. blend, 65 oct. & above	$1.50 –$1.60	$1.50 –$1.60
(d) 40-43 gravity, w.w. kerosine	$1.30 –$1.40	$1.30 –$1.40
Kerosine, p.w.	$1.25 –$1.35	$1.25 –$1.35

New York Export

(Cents per gal. in bbls. FAS. New York)

CYLINDER OILS (Pennsylvania Products)

Bright stock:		
Light, 25 p.t.	23.00	23.00
Neutral oil:		
200 3 color, 25 p.t.	24.00	24.00
150 3 color, 25 p.t.	22.00	22.00
600 s.r., unfiltered	15.50	15.50
650 s.r., unfiltered	17.50	17.50
600 fl., s.r.	18.00	18.00
630 fl., s.r.	20.50	20.50

Wax, Domestic *and* Export

(A.S.T.M. Tests. Melting points, however, are A.M.P., 3 higher than E.M.P. Export prices, FAS., carloads. Domestic prices, FOB. refineries, in bags, carloads, with 0.2c discount allowed for shipment in bulk, except where noted below. Scale solid; fully refined, slabs in bags)

Prices Effective	May 29	
	New York	
	Domestic	**Export**
124-6 Y.C. scale	2.95 – 3.00	2.95 – 3.00
122-4 W.C. scale	3.00	3.00
124-6 W.C. scale	3.00	3.00
123-5 Fully rfd.	4.00	3.625
125-7 Fully rfd.	4.15	3.75
128-30 Fully rfd.	(h) 4.25	4.00
130-2 Fully rfd.	(h) 4.60	4.25
133-5 Fully rfd.	(h) 4.90	4.65
135-7 Fully rfd.	(h) 5.15	5.00
	New Orleans	
	Domestic	**Export**
124-6 Y.C. scale	2.95 – 3.00	2.95 – 3.00
122-4 W.C. scale	3.00	3.00
124-6 W.C. scale	3.00	3.00
123-5 Fully rfd.	4.00	3.625
125-7 Fully rfd.	4.15	3.75
128-30 Fully rfd.	(h) 4.25	4.00
130-2 Fully rfd.	(h) 4.60	4.25
133-5 Fully rfd.	(h) 4.90	4.65

Gulf Coast

For note on combining export and domestic listings, see National Petroleum News of May 10, page 48.

(FOB. ship at Gulf for domestic and export shipment; minimum 20,000 bbls.; representing traders' opinions)

MOTOR GASOLINE

	May 29		
	60-62 Gravity, 400 e.p.	**61-63 Gravity, 390 e.p.**	**64-66 Gravity, 375 e.p.**
60 octane	4.375– 4.50	4.375– 4.50	4.375– 4.50
61 octane	4.375– 4.50	4.375– 4.50	4.375– 4.50
62 octane	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
63 octane	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
64 octane	4.50 – 4.625	4.50 – 4.625	4.50 – 4.625
65 octane	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
66 octane	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875
67 octane	4.875– 5.125	4.875– 5.125	4.875– 5.125
68 octane	5.00 – 5.25	5.00 – 5.25	5.00 – 5.25
70 octane	5.125– 5.50	5.125– 5.50	5.125– 5.50

Prices Effective	May 29	May 22
KEROSINE		
44 gravity, w.w.	3.75 – 4.00	3.75 – 4.00
41-43 gravity, w.w.	(n) 3.50 – 3.75	3.25 – 3.50
41-43 gravity, p.w.	3.50 – 3.75	3.50 – 3.75

Prices Effective	May 29	May 22
GAS AND BUNKER OILS		
Gas Oil (i):		
Below 43 diesel index	3.00 – 3.125	3.00 – 3.125
43-47 diesel index	3.125– 3.25	3.125– 3.25
48-52 diesel index	3.25 – 3.375	3.25 – 3.375
53-57 diesel index	3.375– 3.50	3.375– 3.50
58 & above	3.50 – 3.625	3.50 – 3.625
LIGHT FUEL OILS		
No. 1	3.50 – 3.75	3.50 – 3.75
No. 2	3.00 – 3.375	3.00 – 3.375
DIESEL and BUNKER OILS		
(c) Diesel Oil	$1.45	(c) $1.45
(c) Grade C bunker oil	$0.75 –$0.85	(c) $0.75–$0.85
Grade C bunker oil, in cargoes	$0.75–$0.77	$0.75

MID-CONTINENT LUBRICATING OILS

(Cents per gal. at Gulf; in bbls., FAS.; in bulk, FOB. terminals)

	May 29	
	(j) Barrels	**Bulk**
190-200 vis. D. 210 brt. stock	22.00	17.80
150-160 vis. D 210 brt. stock:		
0-10 p.p.	18.50 –19.00	14.25 –14.30
10-25 p.p.	18.00 –18.50	13.75 –13.80
150-160 vis. E. 210 brt. stock	18.00	13.80
120 vis. D 210 brt. stock	17.25 –17.50	13.00 –14.50

	May 29 Bulk	May 22 Bulk
180 vis. No. 3 color neutral:		
0-10 p.p.	10.05 –11.50	10.05 –11.50
15-30 p.p.	9.55 –11.00	9.55 –11.00
200 vis. No. 3 color neutral:		
0-10 p.p.	10.80 –12.00	10.80 –12.00
15-30 p.p.	10.30 –11.50	10.30 –11.50
600 s.r. olive green	9.00 –11.25	9.00 –11.25
600 s.r. dark green	7.00 – 9.25	7.00 – 9.25

SOUTH TEXAS LUBRICATING OILS

(Vis. at 100° cold test 0, bulk export shipment, FOB terminals.)

Vis.	Color		
Unfiltered Pale Oils:			
100	No. 3	4.50 – 4.75	4.50 – 4.75
200	No. 3	6.00 – 6.25	6.00 – 6.25
300	No. 3	6.50 – 6.75	6.50 – 6.75
500	No. 3½	7.50	7.50
750	No. 4	8.00 – 8.25	8.00 – 8.25
1200	No. 4	8.375– 8.75	8.375– 8.75
2000	No. 4	8.50 – 9.00	8.50 – 9.00
Red Oils:			
100	No. 5-6	4.50 – 4.75	4.50 – 4.75
200	No. 5-6	6.00 – 6.25	6.00 – 6.25
300	No. 5-6	6.50 – 6.75	6.50 – 6.75
500	No. 5-6	7.50	7.50
750	No. 5-6	8.00 – 8.25	8.00 – 8.25
1200	No. 5-6	8.375– 8.75	8.375– 8.75
2000	No. 5-6	8.50 – 9.00	8.50 – 9.00

Note: Red oil prices cover oils with green cast; prices for blue cast red oils are slightly lower in some cases.

Tanker Rates

(Approximate freight rates to Continental ports shillings per ton of 2240 lbs., British sterling: U. S. ports cents per bbl.)

Rates Effective May 29

	Crude &/or Fuel		Refined Oil &/or Spirits	
	Last Paid	Owners Ask	Last Paid	Owners Ask
Gulf-U.K./Cont. (k)	12/	12/-12/6	12/6	12/6-13
Aruba-U.K./Cont. (k)	10/	10/3-10/6	10/3	10/9-11/6
Gulf-N. Atlantic (l) (not E. of N.Y.): Hvy. Crude & fuel, (10 to 19.9 gravity)	20c	22-23c	....	....
Light Crude, (30 Grav. or Lighter)	19c	20-21c	....	....
Gasoline	....	....	19.5c	20-21c
Kerosine	....	....	20.5c	21-22c
Light Fuel	....	....	21.5c	22-23c

(a) In barge lots. (b) Fuel oils meet specifications of U. S. Commercial standards CS12-35. (c) Ships' bunkers. Lighterage, additional at some points, not included. (d) 150 fire point. (e) For San Francisco cargo prices, add 5c per bbl. to cargo prices shown above. (f) Pacific Specification 200. (g) Pacific Specification 400. (h) Shipment in bags or in bulk. (i) Less than ½ of 1% sulfur. (j) Second-hand barrels. (k) Continental ports in range between Bordeaux and Hamburg, both inclusive. (l) Venezuela loading, same rate; Tampico, 2c to 3c per bbl. additional. (m) Low pour test, low viscosity, No. 5 generally quoted at $1.25. (n) Correction: Thru clerical error, several prices were incorrect for May 22 in May 24 issue, page 44. Following prices are correct for May 22; Eastern Domestic Market, Wilmington, N. C. 60-64 oct. Motor Gasoline, 6.00-6.50c; Portland w.w. kerosine, 4.50c flat; and Gulf Coast 41-43 w.w. kerosine, 3.50-3.75c.

CRUDE OIL MARKETS

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN FIELDS

Posted by Joseph Seep Purchasing Agency
(Effective March 6, 1939, except Corning Jan. 24, 1939)

Penna. Grade Oil in Southwest Penna. Pipe Lines.....$1.65
Penna. Grade Oil in Eureka Pipe Lines (West Virginia).....$1.59
Penna. Grade Oil in Buckeye Pipe Lines (Macksburg, O.).....$1.55
Corning Oil in Buckeye Pipe Lines (Ohio)..$1.02

Posted by Other Companies

Tide Water Associated Oil Co.
Bradford-Allegany district (Penna. and N. Y.) (Effective March 6, 1939).....$2.00
*The Pennzoil Co.: (Effective March 6, 1939)
Penna. Grade Oil in National Transit Lines *1 93
*The Pennzoil Co. posts $1.93 in Cochran, Franklin, Hamilton and Doolittle, Pa. fields, prices in other lower districts range down to $1.88 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co.

Midland, Midland County (April 17, 1939)...$0.975

Posted by Simrall Corp.
(Effective April 20, 1939)

Crystal, Greendale, Porter and Wise.....$0.975
Beaverton, Buckeye, Bentley, Edenville.....$0.95
Freeman.....$0.89
(Effective April 18, 1939)
West Branch, Arenac, and equal grades....$0.74

Posted by Bay Pipe Line Corp.
(Effective April 20, 1939)

Bentley and Buckeye.....$0.95
Saginaw and Wise.....$0.975

CENTRAL STATES FIELDS

Posted by Ohio Oil Co.
(Effective Oct. 13, 1938)

Illinois and Princeton.....$1.05
Illinois Basin.....$1.15

Posted by Sohio Corp.

Illinois Basin:
Beecher City (Effective Oct. 13, 1938).....$1.15
Centralia Field:
Congested District (Effective Oct. 1, 1938).$1.15
Area Outside Congested District (Effective Oct. 13, 1938).....$1.15

Posted by Carter Oil Co.
(Effective Oct. 14, 1938)

Louden, Fayette County, Ill.....$1.15

Posted by Ashland Oil & Transportation Co.
(Effective Oct. 14, 1938)

Somerset Oil in Ashland Lines, Kentucky:
Big Sandy River.....$1.12
Kentucky River.....$1.20

Posted by Stoll Oil Refining Co.
(Effective Nov. 10, 1938)

Stoll Pipe Line Oil (Ky.).....$1.00

Posted by Fordsville Gathering Line, Inc.
(Effective April 12, 1939)

Birk City Field, Ky.....$1.00
(Effective Oct. 13, 1938)
Owensboro District, Ky.....$1.10

CANADIAN FIELDS

Posted by Imperial Oil Limited
Western Ontario
(Effective Oct. 25, 1938)

Petrolia.....$1.90
Oil Springs.....$1.97

Alberta—Turner Valley
(Prices f.o.b. field tankage)
(Effective Jan. 5, 1938)

Crude Oil			
40-40.9°	$1.14	53-53.9	$1.40
41-41.9	1.16	54-54.9	1.42
42-42.9	1.18	55-55.9	1.44
43-43.9	1.20	56-56.9	1.46
44-44.9	1.22	57-57.9	1.48
45-45.9	1.24	58-58.9	1.50
46-46.9	1.26	59-59.9	1.52
47-47.9	1.28	60-60.9	1.54
48-48.9	1.30	61-61.9	1.56
49-49.9	1.32	62-62.9	1.58
50-50.9	1.34	63-63.9	1.60
51-51.9	1.36	64-64.9	1.62
52-52.9	1.38		

Crude Naphtha, 65 grav. & above.....$2.14

Absorption Gasoline	
90% Rec., 20 lb. Reid v.p.	$1.94
90% Rec., 17 lb. Reid v.p.	$2.08

MID-CONTINENT

Oklahoma-Kansas

*(Effective Oct. 11 to 22, 1938; and Feb. 16, 1939)

	S. O. Indiana	Carter Magnolia Shell	Continental Texas Co.	Sinclair-Prairie
Below 21°....	$0.70	$0.60	....	....
21-21.9	.72	.63	....	....
22-22.9	.74	.66	....	....
23-23.9	.76	.69	....	....
24-24.9	.78	.72	....	....
25-25.9	.80	.75	....	$0.58
26-26.9	.82	.78	....	.63
27-27.9	.84	.81	....	.68
28-28.9	.86	.84	$0.86	.73
29-29.9	.88	.87	.88	.78
30-30.9	.90	.90	.90	.82
31-31.9	.92	.92	.92	.86
32-32.9	.94	.94	.94	.90
33-33.9	.96	.96	.96	.96
34-34.9	.98	.98	.98	.98
35-35.9	1.00	1.00	1.00	1.00
36-36.9	1.02	1.02	1.02	1.02
37-37.9	1.04	1.04	1.04	1.04
38-38.9	1.06	1.06	1.06	1.06
39-39.9	1.08	1.08	1.08	1.08
40 & above....	1.10	1.10	1.10	1.10

*Effective by Carter Oil, Oct. 13, posting in Okla. only; Continental Oil, Oct. 11, with lowest grade below 29; Magnolia, Oct. 12, posting in Okla. only; Shell, Oct. 22; Sinclair-Prairie, Feb. 16, 1939; S. O. Indiana, Oct. 17; The Texas Co., Oct. 12.

North-North Central and Central Texas

Effective 1938:	Stanolind Oct. 17	†Sinclair-Prairie Oct. 11	*Texas Co. *Continental *Magnolia
Below 21°..	$0.60	....	....
21-21.9....	.62	....	....
22-22.9....	.64	....	....
23-23.9....	.66	....	....
24-24.9....	.68	$0.76	$0.79
25-25.9....	.70	for	for
26-26.9....	.72	oil	oil
27-27.9....	.74	below	below
28-28.9....	.76	29°.	29°.
29-29.9....	.78	.78	.81
30-30.9....	.80	.80	.83
31-31.9....	.82	.82	.85
32-32.9....	.84	.84	.87
33-33.9....	.86	.86	.89
34-34.9....	.88	.88	.91
35-35.9....	.90	.90	.93
36-36.9....	.92	.92	.95
37-37.9....	.94	.94	.97
38-38.9....	.96	.96	.99
39-39.9....	.98	.98	1.01
40 & above.	1.00	1.00	1.03

*Effective Oct. 11, by Continental, in North Tex.: Oct. 12, by Texas Co. in North & North Central Texas. Texas Co.'s lowest grade is 28-28.9, at $0.79; by Magnolia, Dec. 3, in N. and N. Central Texas.
†Sinclair-Prairie prices are in N. Cent. Texas and Mexia.

Jefferson County, Texas

Posted by Magnolia Petroleum Co.

Beaumont
(Effective Oct. 12, 1938)

Below 20°.....$0.79		30-30.9.....$1.08	
20-20.9.....	.82	31-31.9.....	1.10
21-21.9.....	.85	32-32.9.....	1.12
22-22.9.....	.88	33-33.9.....	1.14
23-23.9.....	.91	34-34.9.....	1.16
24-24.9.....	.94	35-35.9.....	1.18
25-25.9.....	.97	36-36.9.....	1.20
26-26.9.....	1.00	37-37.9.....	1.22
27-27.9.....	1.02	38-38.9.....	1.24
28-28.9.....	1.04	39-39.9.....	1.26
29-29.9.....	1.06	40 & above.....	1.28

*For below 21°.
Oct. 11, '38, Stanolind Oil & Gas Co. posted same gravity and price schedule in West Beaumont field as Magnolia.

TEXAS FIELDS

Posted by Humble Oil & Refining Co.
**West Central Texas*
(Effective Dec. 3, 1938)

24-24.9.....$0.71		33-33.9.....$0.89	
25-25.9.....	.73	34-34.9.....	.91
26-26.9.....	.75	35-35.9.....	.93
27-27.9.....	.77	36-36.9.....	.95
28-28.9.....	.79	37-37.9.....	.97
29-29.9.....	.81	38-38.9.....	.99
30-30.9.....	.83	39-39.9.....	1.01
31-31.9.....	.85	40 & above.....	1.03
32-32.9.....	.87		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young Counties.
Note: Effective Oct. 1, 1937, Humble prices are based on 100% tank tables at 60F.

**East Central Texas*
(Effective Oct. 11, 1938)

23-23.9.....$0.78		32-32.9.....$0.96	
24-24.9.....	.80	33-33.9.....	.98
25-25.9.....	.82	34-34.9.....	1.00
26-26.9.....	.84	35-35.9.....	1.02
27-27.9.....	.86	36-36.9.....	1.04
28-28.9.....	.88	37-37.9.....	1.06
29-29.9.....	.90	38-38.9.....	1.08
30-30.9.....	.92	39-39.9.....	1.10
31-31.9.....	.94	40 and above...	1.12

Posted by Pan American Pipe Line Co.
(Effective Feb. 15, 1939)

Cayuga, Anderson county.....$0.68
*Including Anderson, Cherokee, Limestone, Navarro counties.

PANHANDLE TEXAS

Posted by Humble Oil & Refining Co.
(Effective Dec. 3, 1938)

	Gray County	Carson-Hutchinson
28-28.9	$0.72	$0.67
29-29.9	.74	.69
30-30.9	.76	.71
31-31.9	.78	.73
32-32.9	.80	.75
33-33.9	.82	.77
34-34.9	.84	.79
35-35.9	.86	.81
36-36.9	.88	.83
37-37.9	.90	.85
38-38.9	.92	.87
39-39.9	.94	.89
40 & above	.96	.91

Effective Oct. 11, 1938, Sinclair Prairie posted same prices in Panhandle Texas as Humble posted Dec. 3. Dec. 3, Magnolia met Humble.

EAST TEXAS

Gulf, Humble, Magnolia, Sinclair Prairie, Stanolind, Texas Co., Tide-Water Associated.....$1.10
*Effective Oct. 11 by Humble, Sinclair Prairie, and Stanolind; Oct. 12 Magnolia, Texas, Tide Water; Oct. 13 by Gulf.

NORTHEAST TEXAS

(Posted by Humble, Oct. 11, 1938)

Talco.....$0.55

(Posted by Magnolia, Oct. 12, 1938)

Cass County and Panola County, Tex.:
Same gravity and price schedule as S. O. Louisiana posts for N. La.-Ark. Crude, which see under that company.

(Posted by The Texas Co., Oct. 12, 1938)

Cass County.....$1.05

WEST TEXAS and NEW MEXICO

(a) (Effective Oct. 11, 1938 to March 24, 1939)

	Humble	Magnolia Stanolind	Shell	Texas Co. Sinclair
Below 20°.....	$0.53	(b)	$0.53	(c)
20-20.9.....	.55	....	.55	....
21-21.9.....	.57	....	.57	....
22-22.9.....	.59	....	.59	....
23-23.9.....	.61	....	.61	....
24-24.9.....	.63	....	.63	....
25-25.9.....	.65	....	.65	.65
26-26.9.....	.67	.67	.67	.67
27-27.9.....	.69	.69	.69	.69
28-28.9.....	.71	.71	.71	.71
29-29.9.....	.73	.73	.73	.73
30-30.9.....	.75	.75	.75	.75
31-31.9.....	.77	.77	.77	.77
32-32.9.....	.79	.79	.79	.79
33-33.9.....	.81	.81	.81	.81
34-34.9.....	.83	.83	.83	.83
35-35.9.....	.85	.85	.85	.85
36-36.9.....	.87	.87	.87	.87
37-37.9.....	.89	.89	for	for
38-38.9.....	.91	.91	oil	oil
39-39.9.....	.93	.93	36° &	36° &
40 & above....	.95	.95	above.	above.

Pecos County, West Texas
(Posted by Humble and Shell, Oct. 11, 1938)

Pecos.....$0.78
Yates Shallow Pool (Shell).....65

(a) Effective by Humble Oil & Refg., Shell Oil, Stanolind Oil & Gas, and Sinclair Prairie, Oct. 11, 1938; by Magnolia Petroleum and The Texas Co., Oct. 12, 1938. On March 24, 1939, Sinclair Prairie revised its posting from 40 & above, to 36 & above, at $0.87.

(b) Magnolia posts $0.63 for below 25; $0.65 for 25-25.9. Stanolind posts $0.65 for below 26.

(c) Texas Co. posts $0.65 for below 26; Sinclair Prairie, $0.63 for below 25.

Note: Humble's postings are in these counties: Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler and Yoakum, West Texas; and Lea county, N. Mex.; Magnolia's are in Crane, Glasscock, Howard, Mitchell, Upton and Winkler; Shell, in Crane, Ector, Glasscock, Howard, Upton, Winkler, Lea; Stanolind in Hendrick field, Winkler county; Texas Co. in Ward, Winkler and Lea; Sinclair in W. Texas and Lea.

Posted by Sinclair Prairie Oil Marketing Co.
(Effective Oct. 11, 1938)

Eddy county, N. Mex.....$0.77

Posted by Continental Oil Co.
(Effective Oct. 11, 1938)

Artesia, Jackson and Maljamar pools, New Mexico: gravity schedule beginning with below 29, at $0.61; 29-29.9, at $0.63; plus 2c differential for each gravity, up to 40 & above, at $0.85.

COLORADO

Posted by Continental Oil Co.
(Effective Oct. 11, 1938)
Ft. Collins and Wellington

Below 29.....$0.81		35-35.9.....$0.95	
29-29.9.....	.83	36-36.9.....	.97
30-30.9.....	.85	37-37.9.....	.99
31-31.9.....	.87	38-38.9.....	1.01
32-32.9.....	.89	39-39.9.....	1.03
33-33.9.....	.91	40 & above.....	1.05
34-34.9.....	.93		

Canon City and Florence, Col.....$0.90

SOUTH AND SOUTHWEST TEXAS

All Shown Below Posted by Humble Oil & Refining Co.
(Effective Oct. 11, 1938)

Carroll, Clark, Darst Creek, Hilbig, Salt Flat and Zoboroski crudes.....$0.96
Van crude.....$0.93
Conroe.....$1.27
(Effective Dec. 3, 1938)
Flour Bluff.....$1.23

Oct. 12, '38, Magnolia met Humble in Darst Creek; posted $0.87 in Luling; $0.99 in Lytton Springs; $1.14 for Cleveland, and $1.02 in Hardin, both in Liberty county, Tex.

Oct. 12, '38, The Texas Co. met Humble in Darst Creek.

**Anahuac and Dickinson*
(Effective Dec. 3, 1938)

Below 20°.....$0.74		30-30.9.....$1.03	
20-20.9.....	.77	31-31.9.....	1.05
21-21.9.....	.80	32-32.9.....	1.07
22-22.9.....	.83	33-33.9.....	1.09
23-23.9.....	.86	34-34.9.....	1.11
24-24.9.....	.89	35-35.9.....	1.13
25-25.9.....	.92	36-36.9.....	1.15
26-26.9.....	.95	37-37.9.....	1.17
27-27.9.....	.97	38-38.9.....	1.19
28-28.9.....	.99	39-39.9.....	1.21
29-29.9.....	1.01	40 & above.....	1.23

*Includes Cedar Point, Fairbanks, Gillock, Hull, Pierce Junction and Raccoon Bend (shallow sand).
Raccoon Bend (Deep sand crude) Tomball and Satsuma
(Effective Dec. 3, 1938)

22-22.9.....$0.95		27-27.9.....$1.05	
23-23.9.....	.97	28-28.9.....	1.07
24-24.9.....	.99	29-29.9.....	1.09
25-25.9.....	1.01	30-30.9.....	1.11
26-26.9.....	1.03	31-31.9.....	1.13

(*Continued on next page*)

CRUDE OIL MARKETS

(Continued from preceding page)

32-32.9	$1.15	37-37.9	$1.25
33-33.9	1.17	38-38.9	1.27
34-34.9	1.19	39-39.9	1.29
35-35.9	1.21	40 & above	1.31
36-36.9	1.23		

Dec. 3, Magnolia met above price and gravity schedule in Tomball.

Posted by Humble

***Mirando**

(Effective Dec. 3, 1938)

Below 20°	$0.74	30-30.9	$1.03
20-20.9	.77	31-31.9	1.05
21-21.9	.80	32-32.9	1.07
22-22.9	.83	33-33.9	1.09
23-23.9	.86	34-34.9	1.11
24-24.9	.89	35-35.9	1.13
25-25.9	.92	36-36.9	1.15
26-26.9	.95	37-37.9	1.17
27-27.9	.97	38-38.9	1.19
28-28.9	.99	39-39.9	1.21
29-29.9	1.01	40 & above	1.23

*****Includes Duval, Jim Hogg, Jim Wells, Webb and Zapata counties, Tex. and Heyser and Placedo crudes.

Oct. 12, '38, Texas Co. posted for Duval-Mirando, $0.77 for below 21, plus 3c differential to 26-26.9, $0.95; 27-27.9, $0.97; 28 & above, $0.99.

Dec. 3, Humble's Mirando schedule met by Magnolia.

LOUISIANA-ARKANSAS

Posted by Standard Oil Co. of Louisiana

(Effective Oct. 5, 1938)

	*N. La.-Ark.	†Columbia County, Ark.	‡South Louisiana
Below 21°	$0.73	$0.66	$0.74
21-21.9	for	for	.77
22-22.9	oil	oil	.80
23-23.9	Below	Below	.83
24-24.9	25°	25°	.86
25-25.9	$0.75	$0.68	.89
26-26.9	.77	.70	.92
27-27.9	.79	.72	.94
28-28.9	.81	.74	.96
29-29.9	.83	.76	.98
30-30.9	.85	.78	1.00
31-31.9	.87	.80	1.02
32-32.9	.89	.82	1.04
33-33.9	.91	.84	1.06
34-34.9	.93	.86	1.08
35-35.9	.95	.88	1.10
36-36.9	.97	.90	1.12
37-37.9	.99	.92	1.14
38-38.9	1.01	.94	1.16
39-39.9	1.03	.96	1.18
40 & above.	1.05	.98	1.20

(Effective Oct. 5, 1938)

Smackover, Ark.....$0.73

Posted by Arkansas Fuel Oil Corp.

(Effective Jan. 28, 1937)

Urania, La.....$1.02

Posted by Continental Oil Co.

(Effective Oct. 11, 1938)

Tepetate and Ville Platte, La.....$1.03

(Effective Jan. 1, 1939)

Abbeville, La.

Below 36	$0.92	38-38.9	$0.98
36-36.9	.94	39-39.9	1.00
37-37.9	.96	40 & above	1.02

Posted by Caddo Crude Oil Purchasing Corp.

(Effective April 19, 1939)

Allison area, Shreveport field.....$1.05

(Effective April 29, 1939)

Lisbon, N. La.

Below 34	$0.73	35 & above	$0.77
34-34.9	.75		

*****Includes Bunkie, Caddo, Carterville, DeSoto, Homer, Haynesville, Rodessa, Sabine and Sarepta, in N. La.; El Dorado and Miller County, Ark. (latter is Ark. part of Rodessa field).

Note: S. O. Louisiana prices in all La.-Ark. fields, effective Oct. 5, 1938, are on 100% tank table basis.

†Includes Buckner, Magnolia, and Village pools.

‡Includes these fields: Baton Rouge, Bayou, Choctaw, Cheneyville, Darrow, Jeanerette, Lirette, N. Crowley and Roanoke.

Oct. 12, 1938, Magnolia Petroleum and The Texas Co. posted same gravity and price schedule as S. O. La. posts in N. La.-Ark. in these fields: Magnolia, in Bull Bayou, Cotton Valley, Haynesville, Pine Island and Rodessa, La., and Eldorado and Rainbow, Ark.; Texas Co. in N. La. Both also met S. O. La in Smackover. Texas Co. posted $1.24 for Garden Island, La. and $1.04 for Lafitte, La.

***GULF COASTAL FIELDS**

Posted by Humble Oil & Refining Co.

†(Effective Oct. 11, 1938)

Below 20	$0.79	30-30.9	$1.08
20-20.9	.82	31-31.9	1.10
21-21.9	.85	32-32.9	1.12
22-22.9	.88	33-33.9	1.14
23-23.9	.91	34-34.9	1.16
24-24.9	.94	35-35.9	1.18
25-25.9	.97	36-36.9	1.20
26-26.9	1.00	37-37.9	1.22
27-27.9	1.02	38-38.9	1.24
28-28.9	1.04	39-39.9	1.26
29-29.9	1.06	40 & above	1.28

Polk County, Tex.

(Posted by Shell Oil Co., Inc.)

Livingston Area (Effective Oct. 11, '38).....$1.10

Schwab Area (Effective Feb. 20, '39).....1.00

†Effective Dec. 3, 1938, gravities up to 45 & above discontinued in Refugio, Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

*****Humble's prices apply in these Texas fields: Amelia, Clear Lake, Goose Creek, Mykawa, Sugarland, Thompsons, Webster and West Columbia; also Refugio, Saxet, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

Oct. 11, 1938, Stanolind posted in Clinton, Hastings, High Island, So. Houston, and Spindletop same prices as Humble in Texas Gulf Coast fields, except that Stanolind's lowest grade is below 21, at $0.82.

Oct. 12, 1938, The Texas Co. posted for Texas & La. Gulf Coast crude: $0.82 for below 21 plus 3c to 26-26.9, which is $1; from there on, 2c, to 34 & above, which is $1.16. In Refugio, same as other Gulf Coast, except highest gravity is 28 & above, $1.04.

Effective Oct. 11, 1938, Sinclair Prairie met Humble's Gulf Coast price & gravity schedule.

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co.

(Effective Oct. 11, 1938)

Salt Creek, (except Tensleep crude), Midway and Dutton Creek, Wyo., same schedule as Stanolind posts in Oklahoma-Kansas, ranging from $0.86 to $1.10, which see under Mid-Continent crude on previous page.

Tensleep, Salt Creek field	$0.646
Iles, light, Col	0.98
Iles, heavy	0.92
Elk Basin, light	0.90
Grass Creek, light	0.90
Frannie light	0.55
Grass Creek, heavy	0.40
Hamilton Dome, Wyo	0.35
Frannie heavy	0.42

Posted by Ohio Oil Co.

(Effective Oct. 11, 1938)

Elk Basin, Wyo	$0.90
Grass Creek, light	0.90
Rock Creek	1.00
Lance Creek	0.77
Dry Creek, Mont	0.92

(Effective May 1, 1938)

Grass Creek, heavy.....$0.50

(Effective Nov. 16, 1937)

Sunburst, Mont.....$0.90

Posted by Continental Oil Co.

(Effective Oct. 11, 1938)

Cat Creek, Mont	$1.10
Big Muddy, Wyo	0 98
Lance Creek, Wyo	0.77

CALIFORNIA, *Posted by Standard Oil of California*

All gravities above those quoted take highest price offered in the field. Prices effective Feb. 26, 1936, except Huntington Beach, Playa del Rey, Santa Fe Springs, Kern Front, Signal Hill (Long Beach) effective March 7, 1936; Elk Hills effective June 22, 1936; Lakeview Area, Aug. 19, 1936; El Segundo and Wilmington, Oct. 15, 1937; Greeley-Canal, July 9, 1938; Santa Maria Valley, by Union Oil, Oct. 15, 1938.

Gravity	Signal Hill (Long Beach) El Segundo †Wilmington	Seal Beach	Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda Brea Canon	Athens Rosecrans	Dominguez	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	‡Newhall and others	Mountain View	Elk Hills	Buena Vista Hills Midway-Sunset Lakeview Area	Greeley-Canal (Kern County)	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria (Union Oil)
13-13.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$0.63
14-14.9	$0.80	$0.79	$0.74	$0.78	$0.79	$0.80	$0.76	....	....	$0.80	$0.76	$0.76	$0.77	$0.78	....	$0.70	....	$0.70	$0.70	....	$0.70	$0.70	....	.65
15-15.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.68
16-16.9	.80	.79	.74	.78	.79	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.70
17-17.9	.80	.79	.74	.78	.81	.80	.76	....	....	.80	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	.70
18-18.9	.80	.79	.74	.78	.84	.80	.78	....	....	.82	.76	.76	.77	.78	....	.70	....	.70	.70	....	.70	.70	....	....
19-19.9	.82	.79	.74	.82	.87	.84	.81	....	....	.85	.76	.78	.77	.78	....	.70	.70	.74	.74	....	.74	.71	.70	....
20-20.9	.85	.79	.74	.85	.90	.88	.84	....	....	.88	.78	.82	.77	.80	....	.70	.70	.78	.78	....	.78	.72	.70	....
21-21.9	.88	.79	.74	.89	.93	.93	.88	....	....	.91	.80	.85	.77	.84	.78	....	.73	.82	.82	....	.82	.74	.70	....
22-22.9	.92	.82	.74	.92	.96	.98	.92	....	....	.93	.84	.89	.79	.88	.78	....	.77	.87	.87	....	.86	.78	.72	....
23-23.9	.95	.86	.77	.96	.99	1.02	.96	.84	.79	.96	.88	.93	.82	.92	.78	....	.80	.92	.92	....	.90	.82	.76	....
24-24.9	.99	.91	.80	1.00	1.02	1.06	.99	.88	.81	.99	.91	.96	.85	.96	.82	....	.84	.97	.97	....	.94	.86	.79	....
25-25.9	1.03	.95	.82	1.03	1.05	1.11	1.03	.93	.83	1.02	.95	....	.89	.99	.86	....	.88	1.01	1.01	....	.98	.90	.83	....
26-26.9	1.06	1.00	.85	1.07	1.09	1.16	1.06	.98	.86	1.05	.98	....	.92	1.03	.90	....	.91	1.06	1.06	....	1.02	....	....	....
27-27.9	1.10	1.05	.88	1.11	1.12	....	1.10	1.03	.88	....	1.02	....	.96	1.06	.95	....	.95	1.10	1.10	$0.91	1.06	....	....	....
28-28.9	1.14	1.10	.90	1.14	1.15	....	1.14	1.07	.90	....	1.06	....	.99	1.10	.99	....	.99	1.15	1.15	.94	1.10	....	....	....
29-29.9	1.17	1.15	.93	1.18	1.18		1.17	1.12	.93	....	1.09	....	1.03	1.14	1.03	....	1.02	1.20	1.20	.98	1.14	....	....	....
30-30.9	1.21	1.19	.95	1.22	1.21		1.21	1.17	.95	....	....	....	1.07	1.17	1.08	....	1.06	1.25	1.25	1.02	1.18	....	....	....
31-31.9				....	1.24		1.24	1.22	.97	....	....	....	1.11	1.21	1.12	....	1.09	1.29	1.29	1.06				....
32-32.9	*Ellwood Terrace			....	1.27		1.27	1.27	1.00	....	....	....	1.14	1.25	1.16	....	1.13	1.34	1.34	1.09	Kettleman Hills			....
33-33.9	....	1.28	....	....	....		....	1.32	....	....	....	....	1.18	1.28	1.20	....	1.17	1.38	1.38	1.13	....	1.19	....	....
34-34.9	....	1.32	....	....	....		....	1.37	....	....	....	....	1.22	1.32	1.25	....	1.20	....	....	1.17	....	1.23	....	....
35-35.9	....	1.35	....	....	....		....	1.42	....	....	....	....	1.25	....	1.29	....	....	....	....	1.20	....	1.27	....	....
36-36.9	....	1.39	....	....	....		....	1.46	....	....	....	....	1.29	....	1.33	....	....	....	....	1.24	....	1.31	....	....
37-37.9	....	1.43	....	....	....		....	1.51	....	....	....	....	1.32	....	1.37	....	....	....	....	1.28	....	1.35	....	....
38-38.9	....	....	....	....	....		....	1.56	....	....	....	....	1.36	....	1.42	....	....	....	....	1.31	....	1.39	....	....
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40-40.9	....	....	....	....	....		....	1.66	....	....	....	....	1.43	....	....	....	....	....	....	1.39	....	....	....	....
41-41.9	....	....	....	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	1.43	....	....	....	....
42-42.9	....	....	....	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	1.46	....	....	....	....
43-43.9	....	....	....	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	1.50	....	....	....	....
44-44.9	....	....	....	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	1.54	....	....	....	....
45-45.9	....	....	....	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	1.57	....	....	....	....
46-46.9	....	....	....	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	1.61	....	....	....	....
47-47.9	....	....	....	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	1.65	....	....	....	....
48-48.9	....	....	....	....	....		....	....	....	....	....	....	....	....	....	....	....	....	....	1.68	....	....	....	....

F.O.B. Standard Pipe Line

*****F. o. b. ship.

‡Also McKittrick, Kern River. Kern Front and Round Mountain $0.70 thru 19.9 gravity; no higher gravity quoted.

†Wilmington prices differ on gravities below 18.9. Prices are: 14-16.9, $0.75; 17-17.9, $0.77; and 18-18.9, $0.79; rest of schedule same as Signal Hill.

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Desirable water front. Bulk plant. Philadelphia, Pa. Storage tanks, loading platforms, meters, pumps, ready for use. Long lease. Reasonable rental.

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Northern Indiana, complete in every detail. Gallonage for 1938; gasoline 373,815 gallon, kerosene 72,114 gallon, lube oils 6,792 gallons, grease 2,287 pounds. Bulk plant storage 55,000 gallons, 2 trucks, 12 retail outlets.

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Advertisements set in special type or with border—$4.00 per column inch.

Copy must reach us not later than Saturday preceding date of issue.

All advertisements carried on this page are payable in advance.

"STRICTLY PERSONAL"

An eight-month bicycle tour of Europe has just been completed by **William Morgan Taylor,** son of **Herbert Taylor,** sales promotion manager of Aetna Oil Service, Inc. of Louisville. His mother, Mrs. Herbert Taylor, sailed recently for France where she will join her son. Since graduating from high school in 1937, young Taylor has visited five continents and 27 countries as an employe on tankers of The Texas Corp. and the Standard Oil Co. of New Jersey. He has also earned $200 writing of his travels and experiences for American newspapers. He will return in September to enter the engineering school of the University of Louisville.

* * *

Vice President **H. L. Briggs** of the Coline Oil Co., Oklahoma City, has announced that company will move its headquarters to Amarillo, Tex., effective July 1.

* * *

The annual trip to the home office of the Standard Oil Co. of New Jersey was completed last week by officers of the Carter Oil Co. of Tulsa. Those making the trip to New York included President **J. J. Conry** of the Carter Co.; President **W. R. Finney** of the Oklahoma Pipe Line Co.; Vice President **L. F. McCollum** and **F. W. Floyd,** and **H. F. Miller,** in charge of marketing; **H. F. Moses,** head of the geological and scouting departments, and **Ivan S. Salnikov,** chief petroleum engineer, all of Carter.

* * *

Mason C. Lyons of the Vickers Petroleum Co., Wichita, Kan., has been installed as president of the Petroleum Accountants Society of Kansas, succeeding **J. C. Dial,** of the Aylward Production Co.

* * *

Attorney **Sam Bartlett** of Ellsworth, Kan., has been appointed a member of the Kansas Corporation Commission by Gov. Payne H. Ratner. He succeeds **Ernest E. Blincoe,** whose term expired March 20.

* * *

Two Oklahoma City geologists have obtained positions recently in South America. **A. H. Richards** has joined the government-subsidized Yacimientos Petroliferos Fiscales at Mendoza, Argentine, and **Henry F. Schweer** has gone to Venezuela to join the staff of the Socony Vacuum Oil Co.

* * *

Carl Patterson has resigned as Tulsa Central high school English teacher to become laison official for the Carter Oil Co. in Venezuela.

Arch Stafford, of Omaha, is retiring as vice-president in charge of sales of the Quaker Petroleum Co. June 1, shedding his business harness after nearly 20 years with oil companies in Kansas City and Omaha "to take it a little easy for awhile".

He will attend the Rotary International Convention in Cleveland June 19 to 23. Then, with Mrs. Stafford and their daughter, Elizabeth, he will sail from New York on June 24 to

Arch Stafford

spend the summer in Europe. Returning in September, the Staffords plan a brief stay in Omaha, moving on to California for the winter.

Mr. Stafford entered the oil business in 1920 with the old Pennsylvania Petroleum Co. at Kansas City. He joined Quaker Petroleum in Omaha as vice-president in charge of sales in 1925, continuing as the company grew to its present position as one of the leading marketing companies of the central west. **Marshall McArthur** is president of Quaker Petroleum.

* * *

N. T. Gilbert, general manager of the Midstates Oil Corp., Tulsa, has been named chairman of the budget and finance committee of the Independent Petroleum Assn. of America. He also is treasurer of that organization. Vice chairman is **T. F. Birmingham,** president of Margay Oil Co., Tulsa.

* * *

The Indianapolis Oil Club holds weekly luncheon meetings, presided over by **Sam Hurd.** Among directors of the club are **Phil T. Williams** and **J. L. Wadlow.**

* * *

E. M. Taylor, of Kinsley, president, presided at a recent meeting of the Kansas Oil Men's Ass'n. at which business matters of the association, and legislation affecting the oil industry in Kansas were discussed. Following directors attended:

Ernest Sejkora of Chapman; **Walter Glidden** of Clay Center; **A. F. Geyer,** of Waterville; **D. L. Anderson,** of Burr Oak; **Harvey Shaw,** of Plainville; **E. N. Schriber,** of Wichita; **Dean Kimmel,** of Hiawatha; **L. B. Mohler,** of Arkansas City; **Kenneth Crumly,** of Colby; **H. L. Funk,** of White City; **S. C. Tolbert,** of Concordia; **Fred Kistler,** of Coffeyville and **C. E. Homles,** secretary of the association.

* * *

Harry M. Rugg, of Detroit, automotive engineer for Pennsylvania Grade Crude Oil Ass'n. is on an extended trip through the east.

* * *

John R. Boettcher, Jr., has resigned as president of the Metropolitan Philadelphia Association of Petroleum Retailers because of ill health. **George Smith** has been appointed acting president with full powers until an election can be held.

* * *

President **W. A. Schlueter** of the Refinery Supply Co. has returned from a business trip to Washington, Pittsburgh, New York and other eastern cities, and to the meeting of the Scientific Operators Assn. at Atlantic City.

* * *

W. H. Larkin has been named general sales and advertising manager for the Larkin Packer Co., with headquarters in St. Louis. **C. F. Dougherty** of Tulsa has been named general field sales manager in charge of all field salesmen and warehouses, and **H. B. Lindemuth** has been transferred from Evansville, Ind. to the Tulsa branch as field salesman.

* * *

H. K. Phelps, Jr., recently appointed temporary receiver for Atlas Pipe Line Corp., has announced appointment of **B. G. Connolly** as general manager of the corporation.

THIS BUCKEYE FILL BOX

will keep your Underground Tank Tightly Sealed Against Water

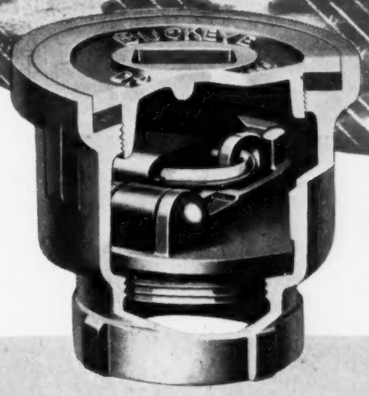

Fig. 450

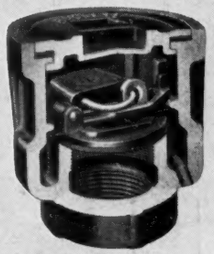

Fig. 449

Fig. 452

Fig. 632

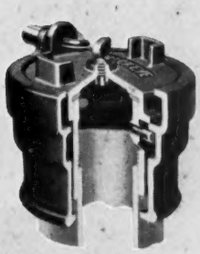

Fig. 650

Fig. 654

COMPLETE LINE OF VALVES AND FITTINGS FOR SERVICE STATIONS AND BULK PLANTS

Hose Nozzle Valves . . . Extractor Fittings
Fill Boxes . . . Foot Valves . . . Swing Joints
Truck Tank Faucets . . . Fuel Oil Nozzles
Angle Check Valves . . . Loading Valves
Gate Valves . . . Dome Covers

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There is a wide variety of Buckeye Fill Boxes from which you may choose the type best meeting your requirements: the screw-on lid lock type, Fig. 450; the "quick opening" lock type, Fig. 449; Fig. 452, plain Flush Fill Box without the locking feature; the threaded water-tight Fill Cap, Fig. 632; Fig. 650, Fill and Gauge Box; the sturdy all-brass, Fig. 654; the plain Fill Cap, Fig. 440, and many others which are not shown here, but which are in thoroughly satisfactory use in all parts of the country.

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WRITE FOR BUCKEYE CATALOG NO. 10

BUCKEYE
QUALITY FITTINGS

Published every week at 1213 West 3rd St., Cleveland, O. Subscription rate $3.00 per year in United States and Mexico; $4.00 Canada; $4.50 foreign countries. Entered as second class matter Jan. 17, 1910 at Cleveland, O., post office under act of Mar. 3, 1879, by The National Petroleum Publishing Co.

Why new Goodrich

for you, work for your

• Sample of new Goodrich Type 72 hose after accelerated tests equal to six years of service in busy station. The Goodrich hose lasted three times as long as any other smooth tube hose.

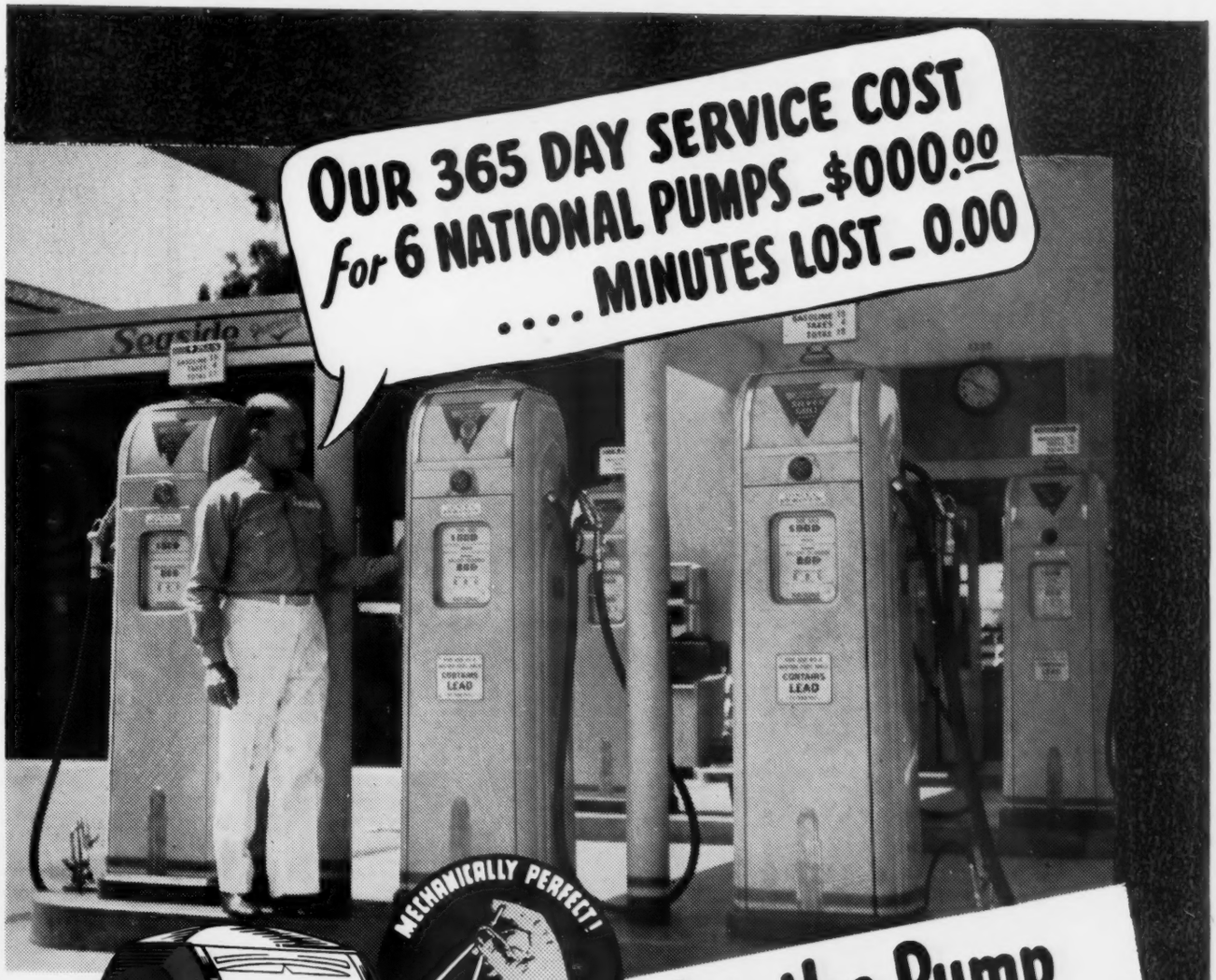
PLEASES CUSTOMERS—The soft cover prevents scratching of fenders. The hose takes a full U-bend without kinking, so cars can be serviced quickly at any angle from the pump.

SAVES YOU MONEY — New synthetic lining unaffected by gasoline. New cover stands 10 times the wear of former cotton cover. Long life of hose makes expensive, troublesome recoupling unnecessary. Smooth synthetic tube increases flow 35% in ¾-inch size so most users substitute ¾-inch for old 1-inch and save money.

SAVES WORK FOR YOUR DEALERS

This new Goodrich hose is ⅓ lighter — 2½ pounds lighter for a 10-ft. length. Multiply that by the times a station man lifts a hose every day, and you'll see why this new hose means more pep at your pumps, better service, more sales.

Cover is easily cleaned, never shows dirt. And if this hose is crushed, it springs back to form — there's no stiff wire to be pounded back into shape.



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You can save many ways with these handsome, mechanically perfect pumps. They use less current. They help your balanced selling program. Write for full details today! National Pumps Corp., *Executive Offices*, Cincinnati, O., *Factory*, Dayton, O.

NATIONAL **COMPUTAPEX A-38**

Paul Ryan

Paul Ryan, new president of National Refining Co., worked his way through Massachusetts Institute of Technology and Harvard School of Business as a roustabout in the oil fields and refineries of the southwest during the summer. For 20 of his 39 years, he has worked in the oil industry.

For some years, he worked with Chestnut & Smith, and Warren Petroleum Co., natural gasoline manufacturers at Tulsa, and for eight years was with Shell Petroleum Corp. He left Shell in 1935 to engage in consulting work for several major companies at New York City.

Mr. Ryan is married and has three boys, age 9, 6 and 3 years.